

FIG. 1

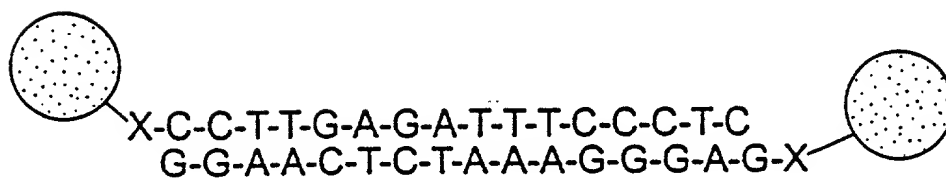
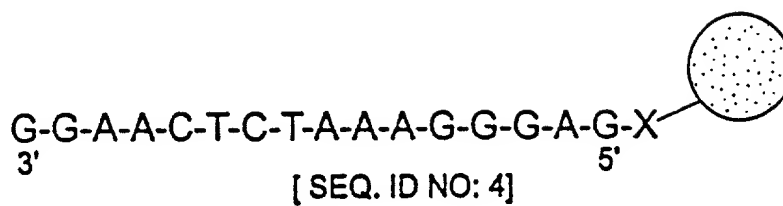
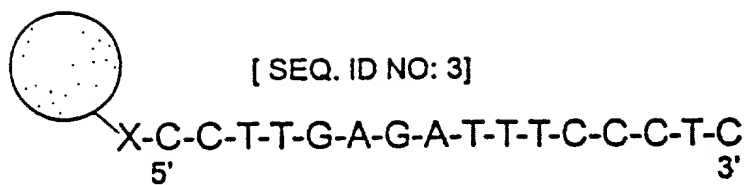


FIG.2

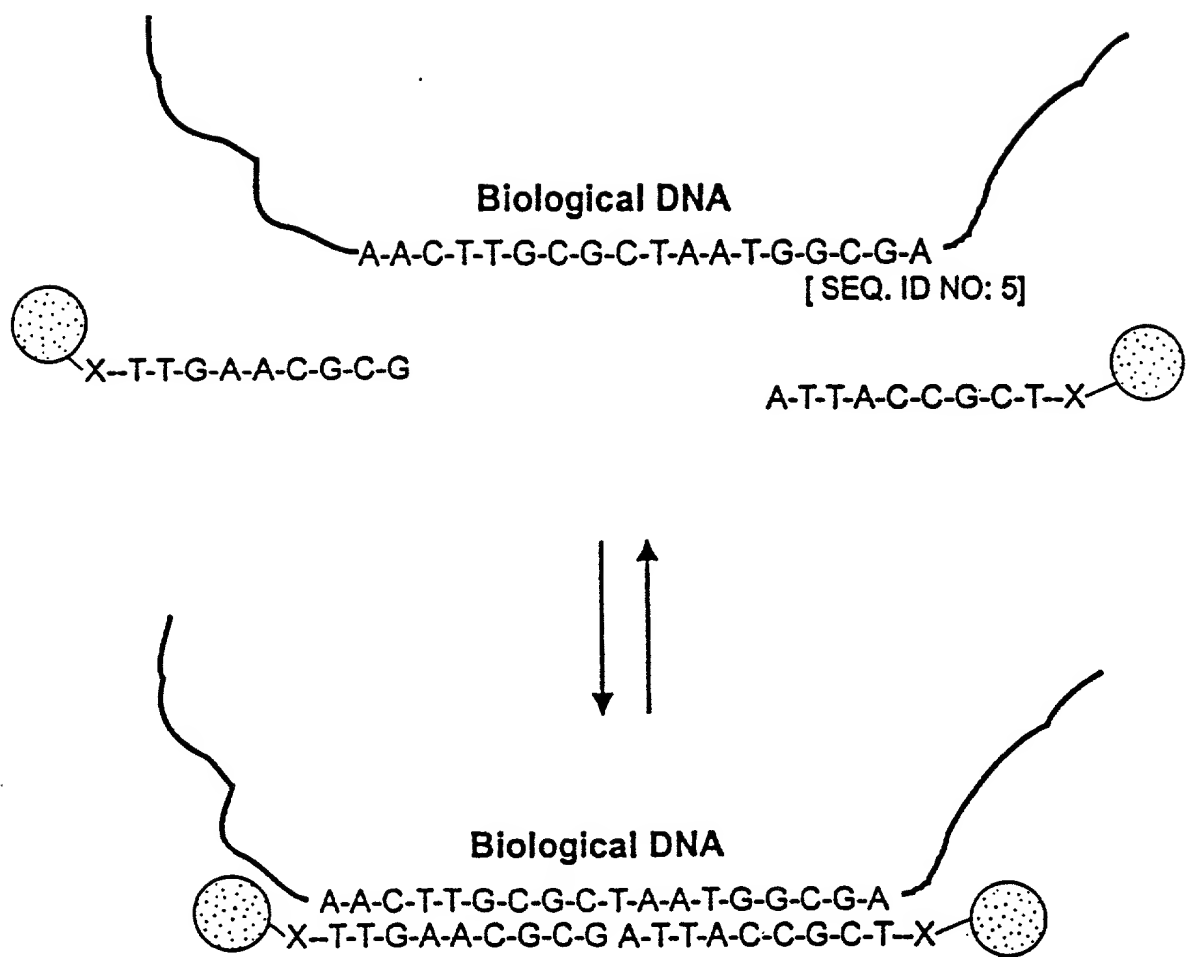
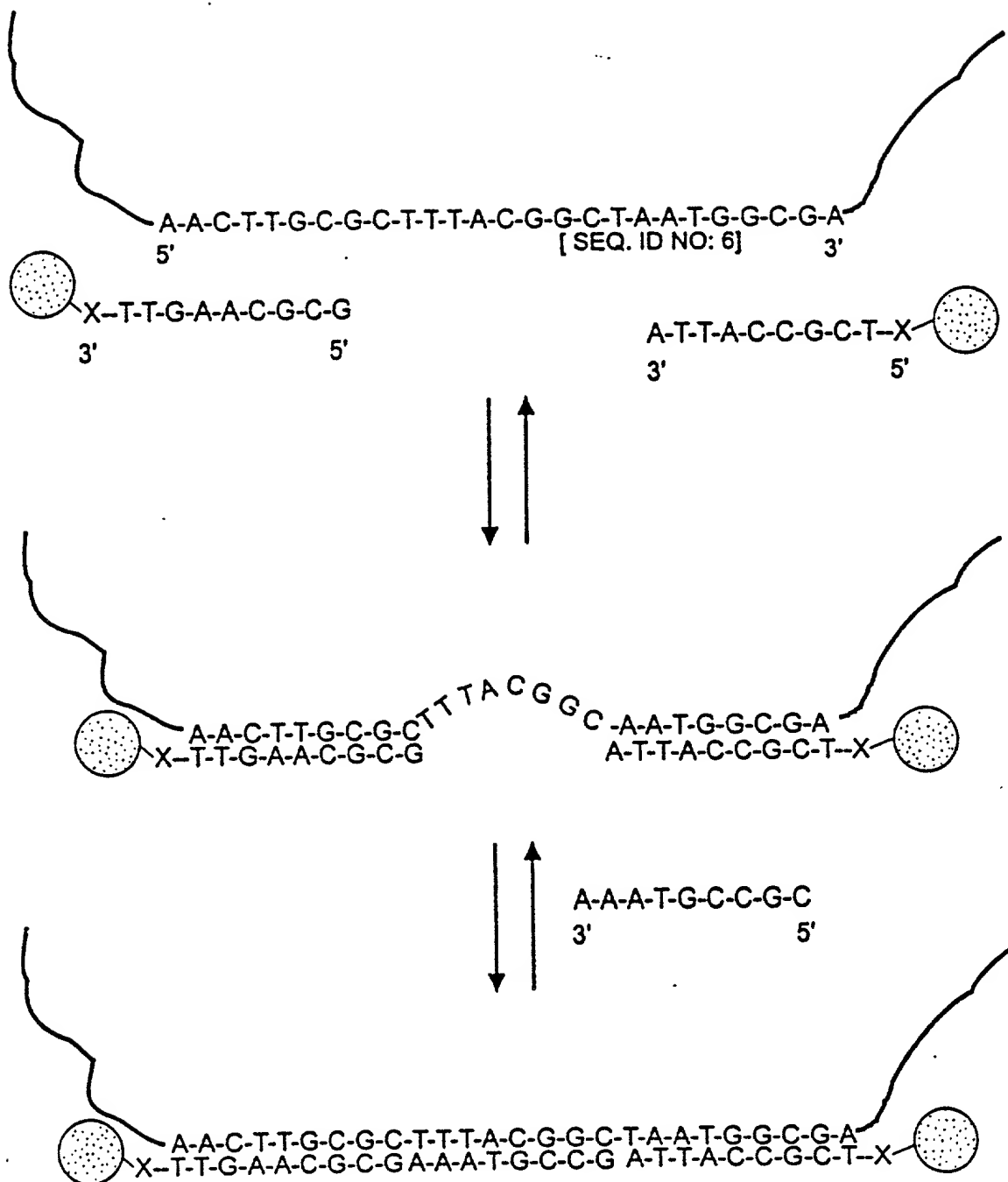
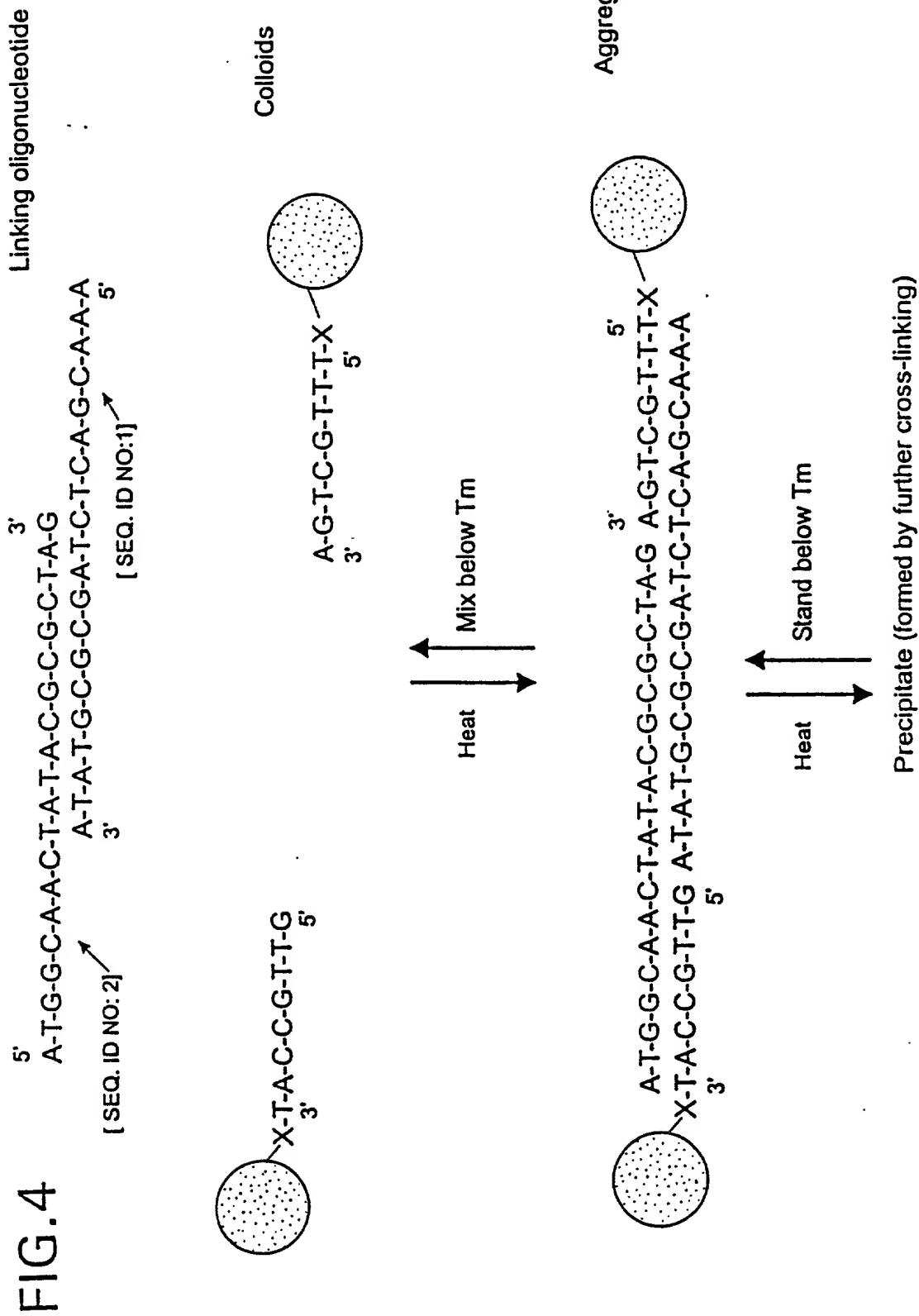


FIG. 3





# FIG.5

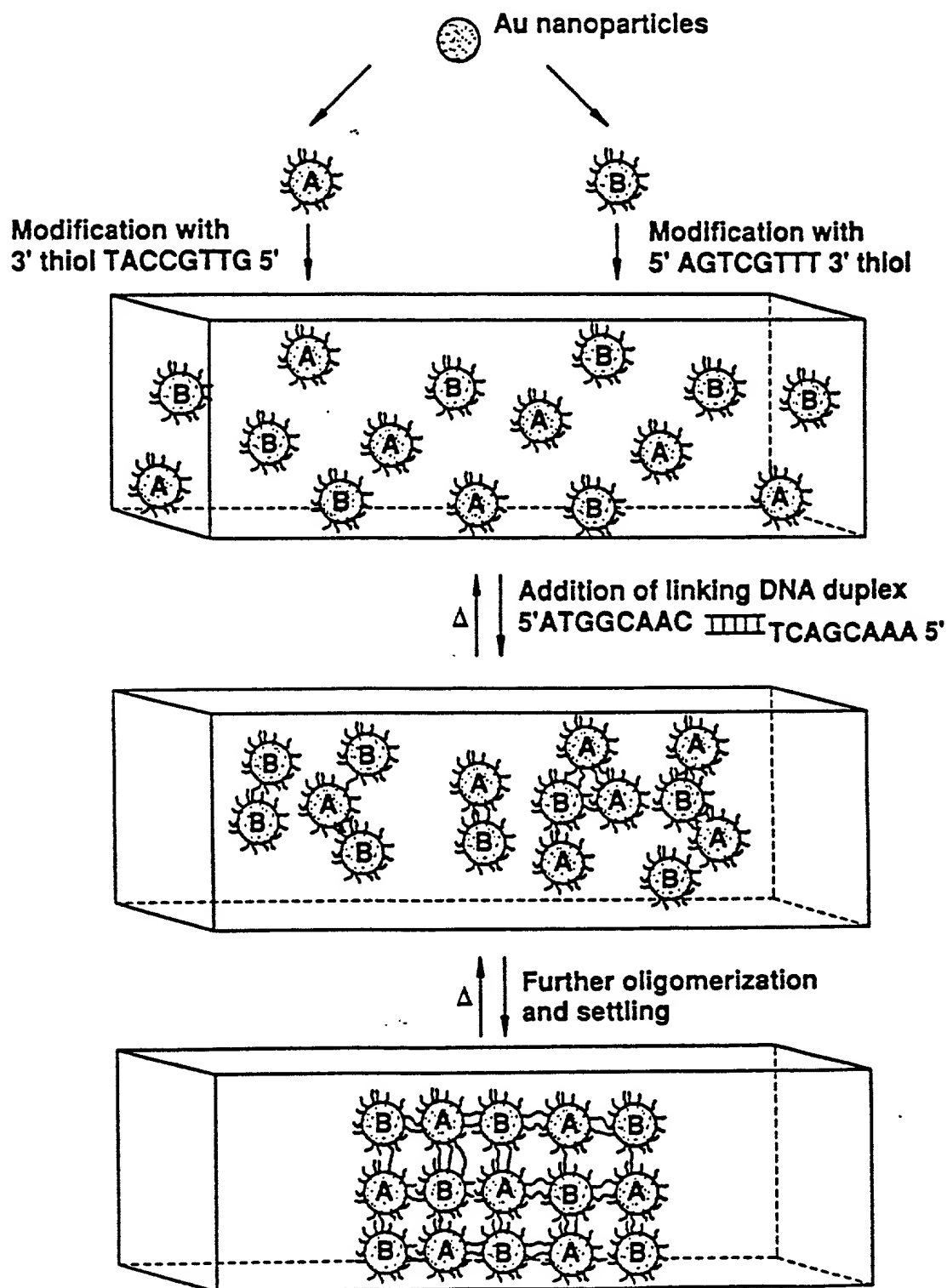




FIG. 6A FIG. 6B FIG. 6C

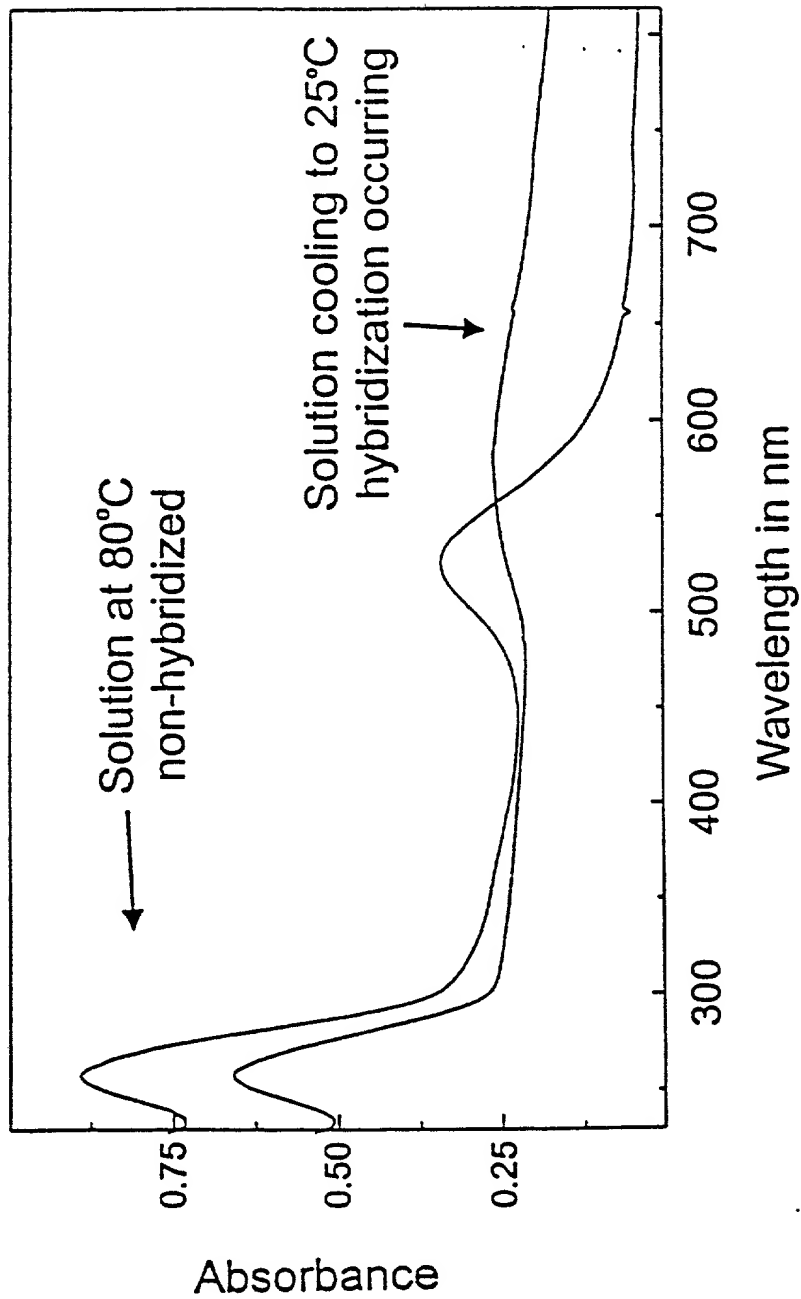


FIG.7

FIG.8A

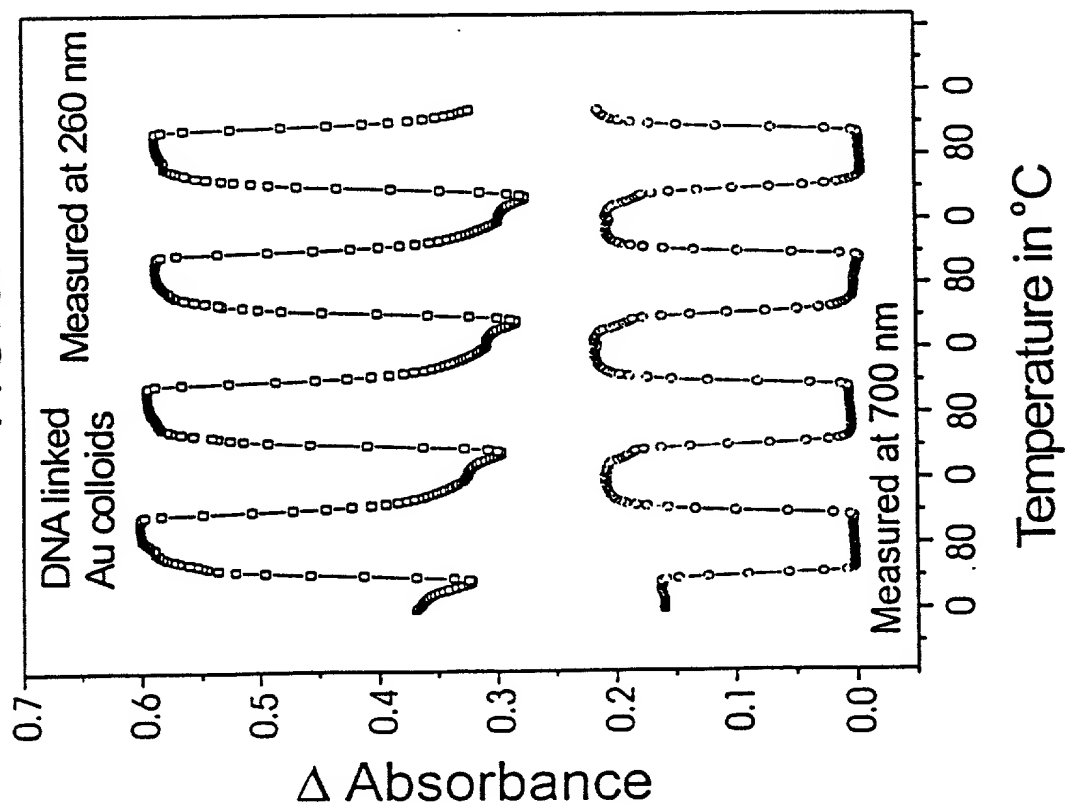


FIG.8B

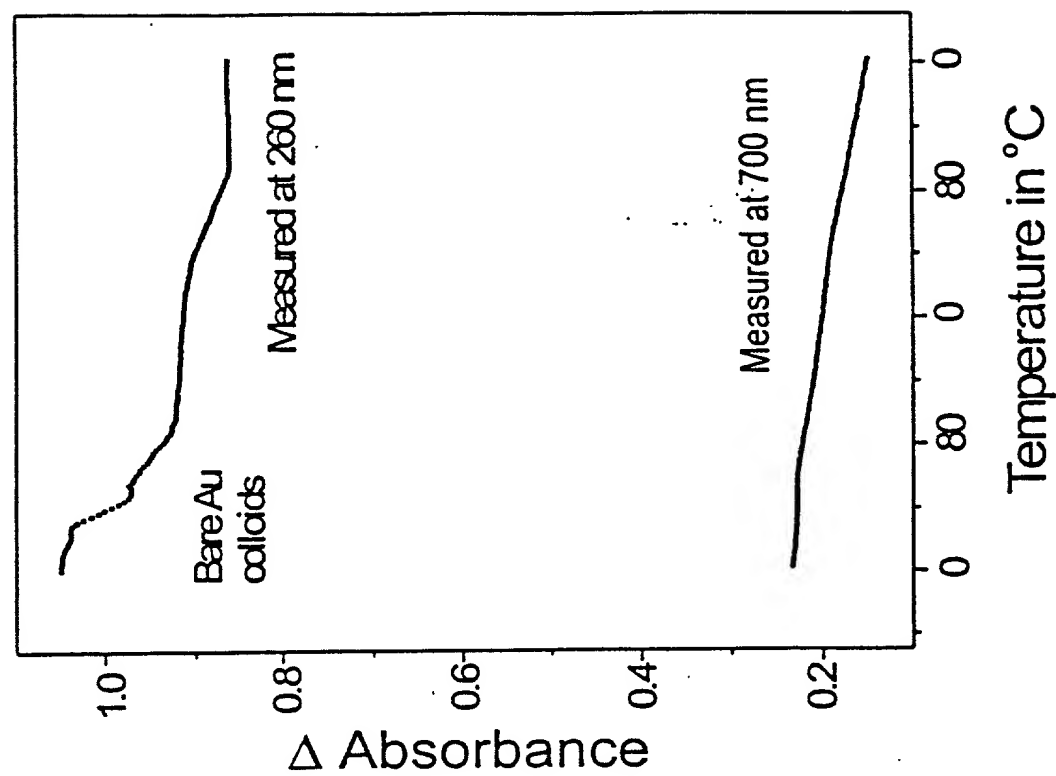






FIG. 10

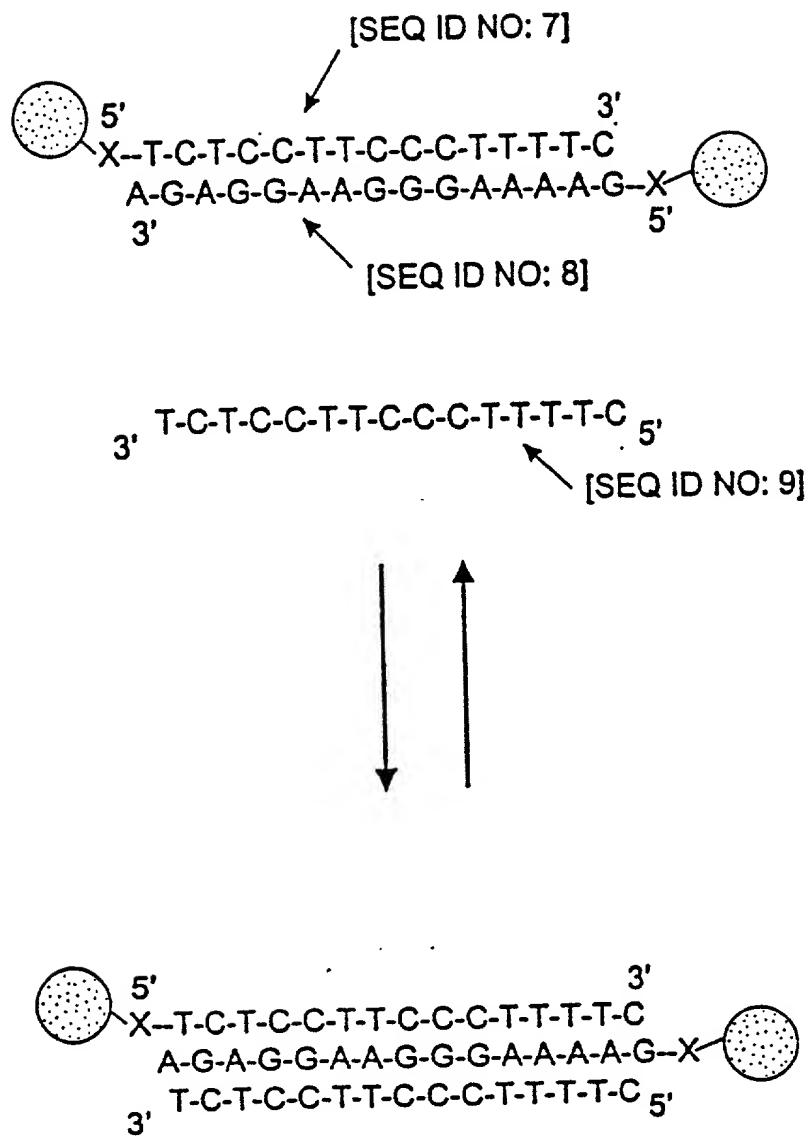
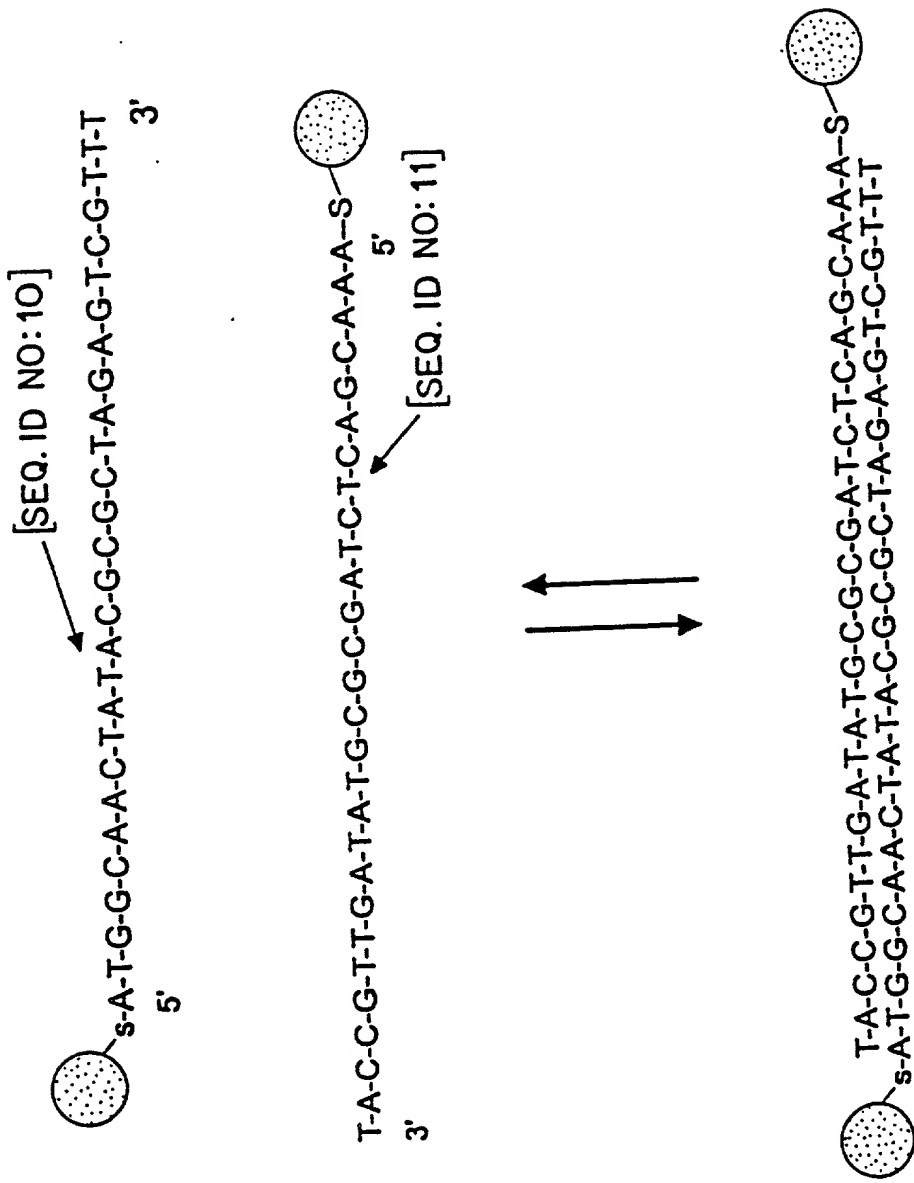


FIG. 11



**FIG. 12A**

Complementary Target

[SEQ. ID NO:12]

3' T-C-G-T-A-C-C-A-G-C-T-A-T-C-C T-T-T-G-C-T-G-A-G-A-T-C-G-C-G  
5' A-G-C-A-T-G-G-T-C-G-A-T-A-G-G-A-A-A-C-G-A-C-T-C-T-A-G-C-G-C

**FIG. 12B**

Probes without Target

3' T-C-G-T-A-C-C-A-G-C-T-A-T-C-C T-T-T-G-C-T-G-A-G-A-T-C-G-C-G

**FIG. 12C**

Half Complementary Target

3' T-C-G-T-A-C-C-A-G-C-T-A-T-C-C T-T-T-G-C-T-G-A-G-A-T-C-G-C-G  
5' A-G-C-A-T-G-G-T-C-G-A-T-A-G-G-A-T-G-G-C-A-A-C-T-A-T-A-C-G-C

**FIG. 12D**

Target - 6 bp

3' T-C-G-T-A-C-C-A-G-C-T-A-T-C-C T-T-T-G-C-T-G-A-G-A-T-C-G-C-G  
5' G-T-C-G-A-T-A-G-G-A-A-A-C-G-A-C-T-C-T-A-G-C-G-C

**FIG. 12E**

One bp Mismatch

3' T-C-G-T-A-C-C-A-G-C-T-A-T-C-C T-T-T-G-C-T-G-A-G-A-T-C-G-C-G  
5' A-G-C-A-T-G-G-T-G-A-T-A-G-G-A-A-A-C-G-A-C-T-C-T-A-G-C-G-C

**FIG. 12F**

Two bp Mismatch

3' T-C-G-T-A-C-C-A-G-C-T-A-T-C-C T-T-T-G-C-T-G-A-G-A-T-C-G-C-G  
5' A-G-C-A-T-G-T-T-G-A-T-A-G-G-A-A-A-C-G-A-C-T-C-T-A-G-C-G-C

FIG.13A

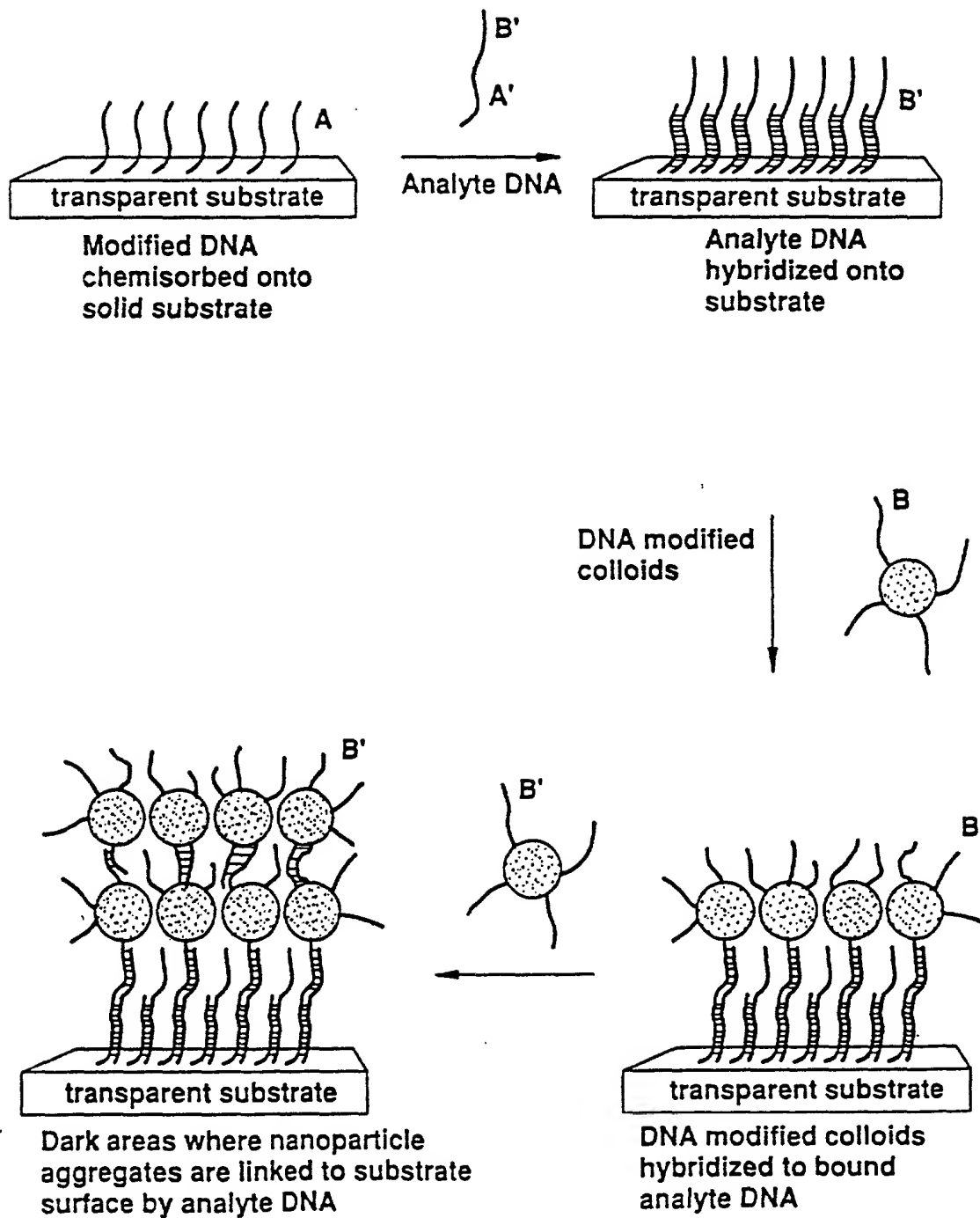


FIG. 13B

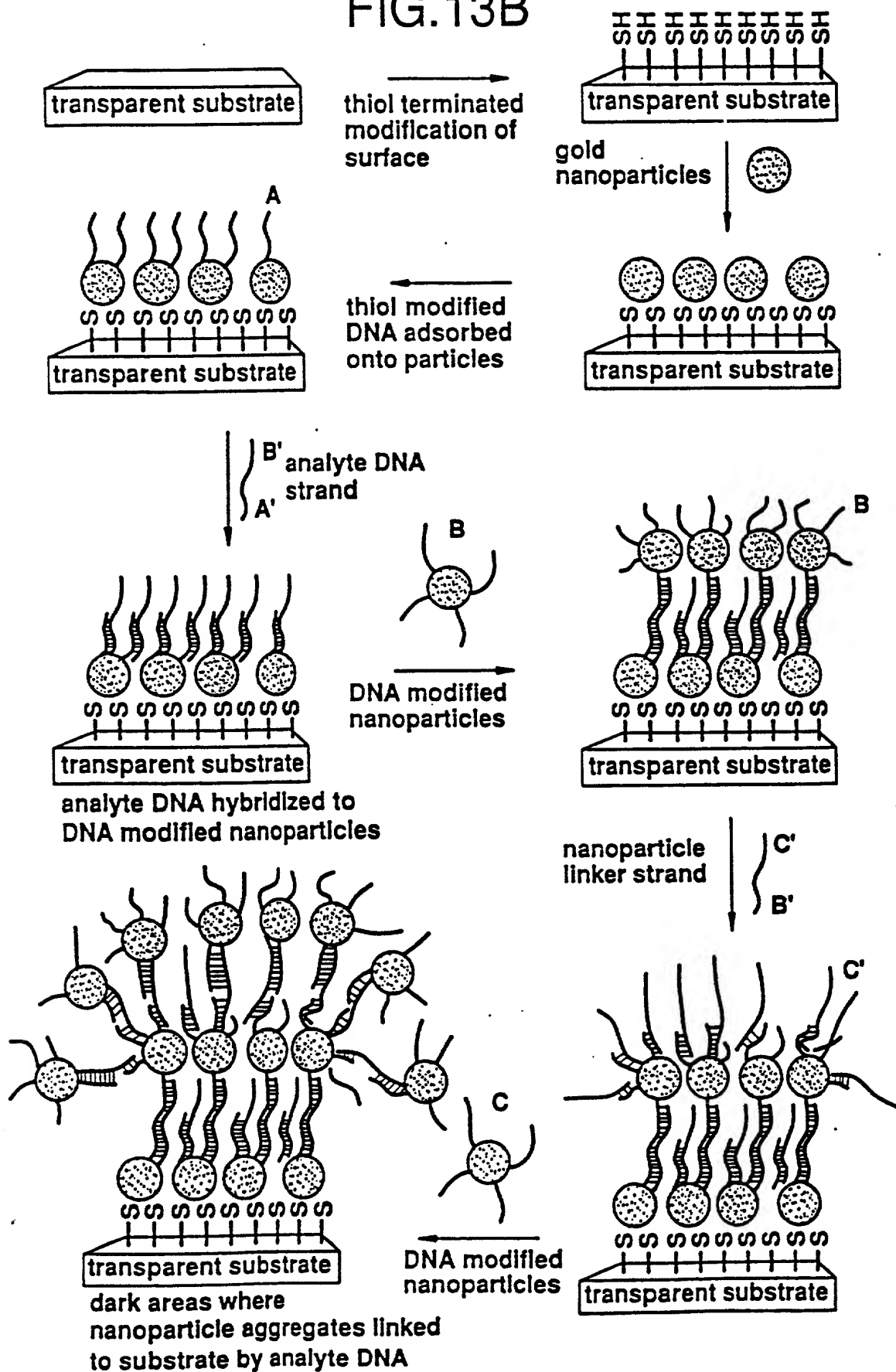


FIG.14A

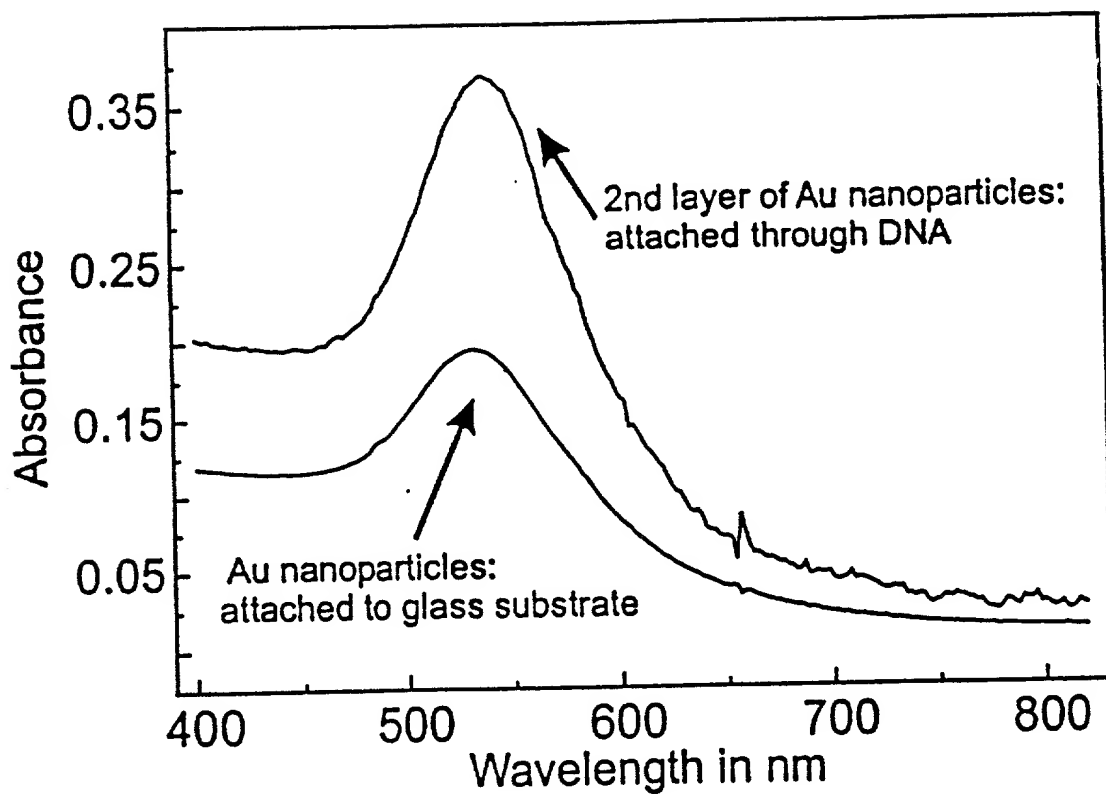
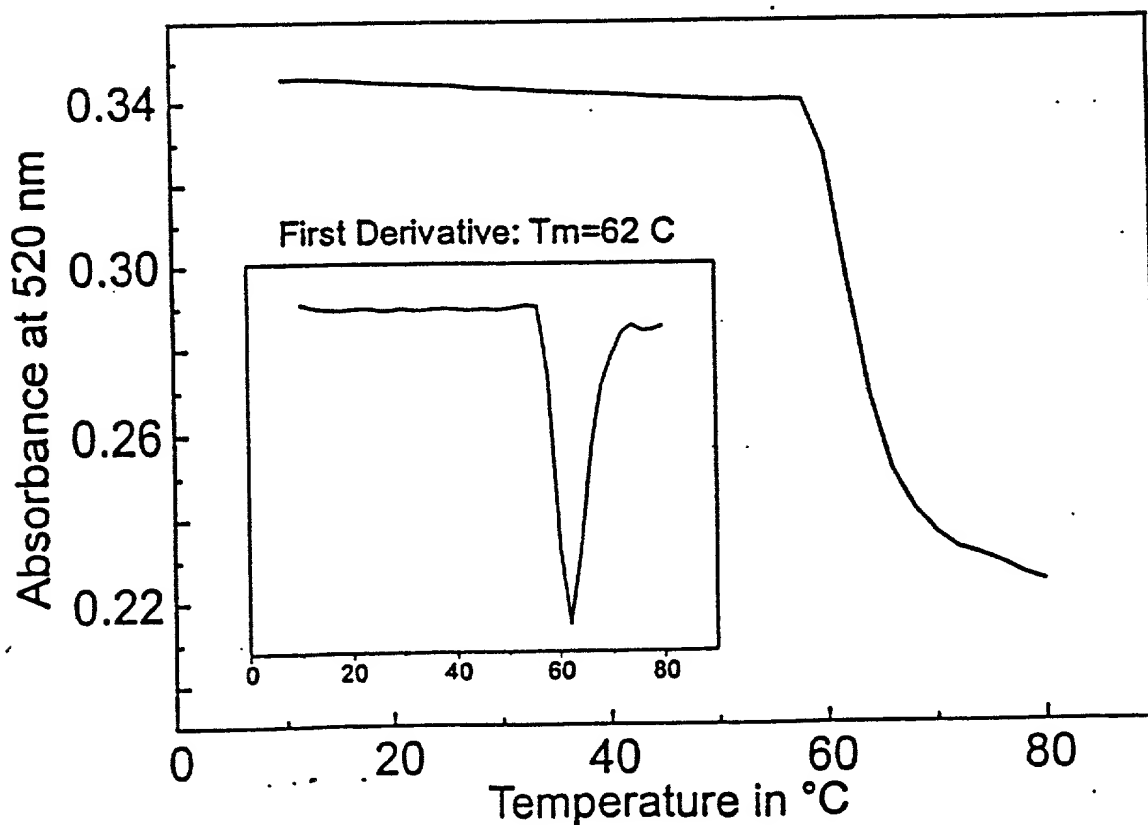
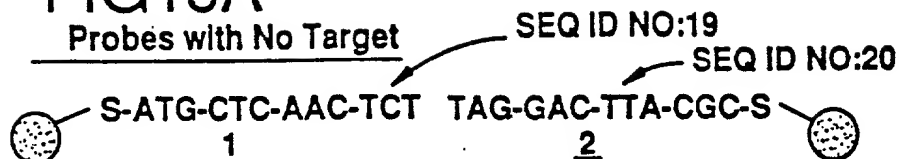


FIG.14B



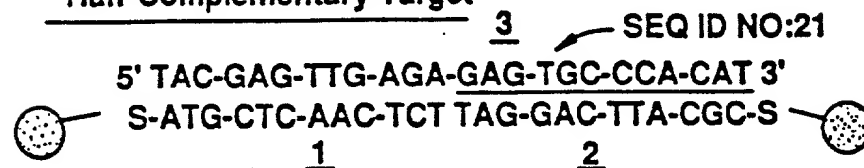
# FIG15A

Probes with No Target



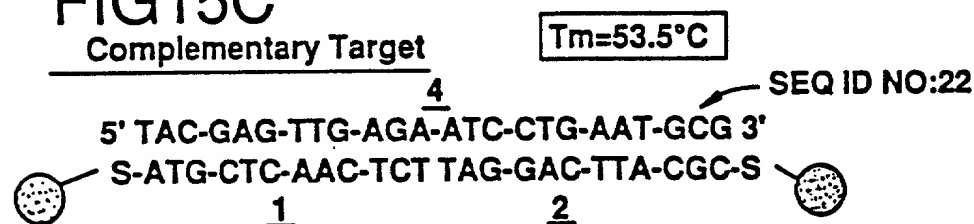
# FIG15B

Half-Complementary Target



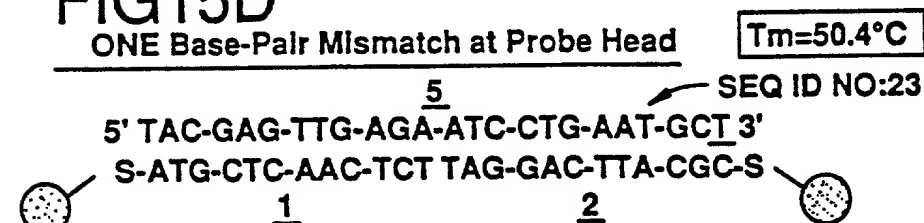
# FIG15C

Complementary Target



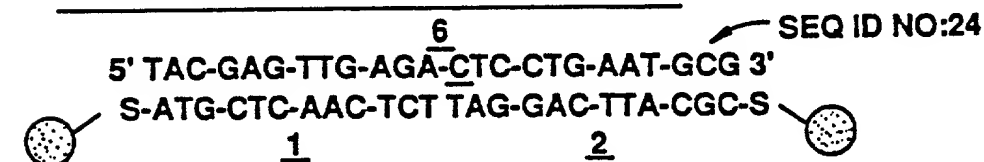
# FIG15D

ONE Base-Pair Mismatch at Probe Head



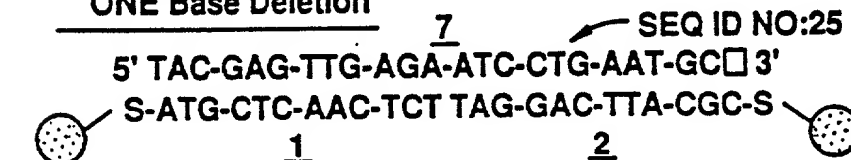
# FIG15E

ONE Base-Pair Mismatch at Probe Tail



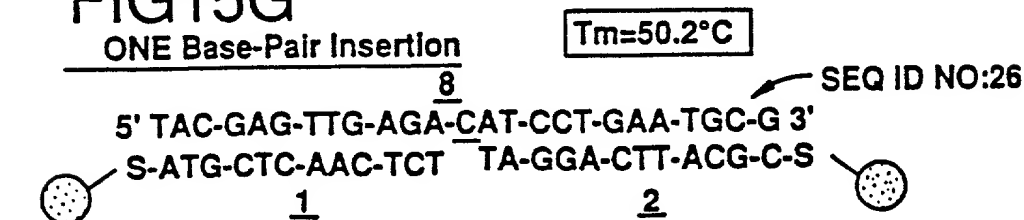
# FIG15F

ONE Base Deletion



# FIG15G

ONE Base-Pair Insertion





# FIG. 16A

## 24 Base Template

5' TAC-GAG-TTG-AGA-ATC-CTG-AAT-GCG 3'  
 —S-ATG-CTC-AAC-TCT TAG-GAC-TTA-CGC-S —

1

2

# FIG. 16B

## 48 Base Template with Complementary 24 Base Filler

5' TAC-GAG-TTG-AGA-CCG-TTA-AGA-CGA-GGC-AAT-CAT-GCA-ATC-CTG-AAT-GCG 3'  
 —S-ATG-CTC-AAC-TCT GGC-AAT-TCT-GCT-CCG-TTA-GTA-CGT TAG-GAC-TTA-CGC-S —

1

2

# FIG. 16C

## 72 Base Template with Complementary 48 Base Filler

5' TAC-GAG-TTG-AGA-CCG-TTA-AGA-CGA-GGC-AAT-CAT-GCA-TAT-ATT-GGA-CGC-TTT-ACG-GAC-AAC-ATC-CTG-AAT-GCG 3'  
 —S-ATG-CTC-AAC-TCT GGC-AAT-TCT-GCT-CCG-TTA-GTA-CGT-ATA-TAA-CCT-GCG-AAA-TGC-CTG-TTG TAG-GAC-TTA-CGC-S —

1

2

FIG. 17A

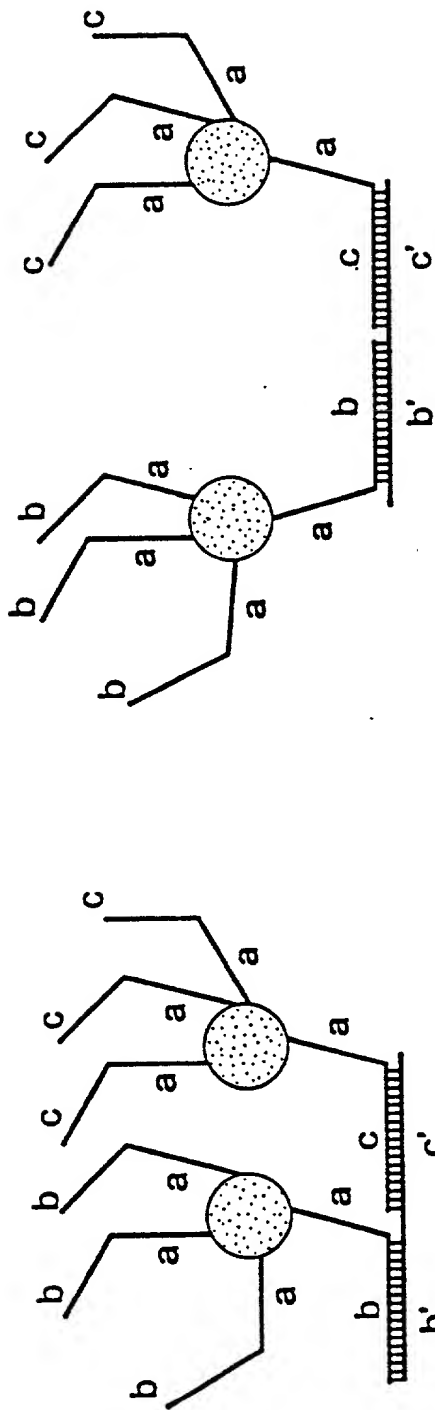


FIG. 17C

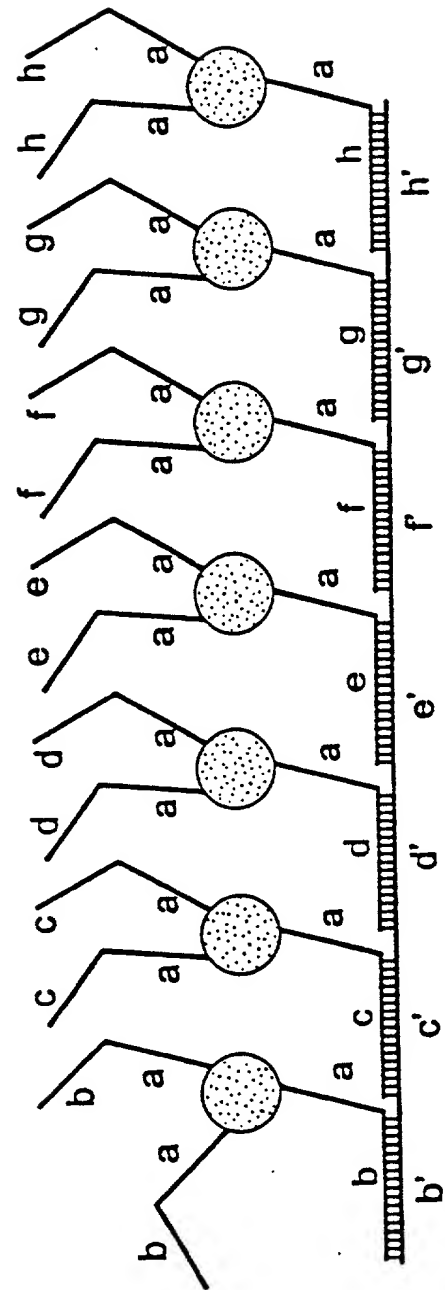


FIG.17D

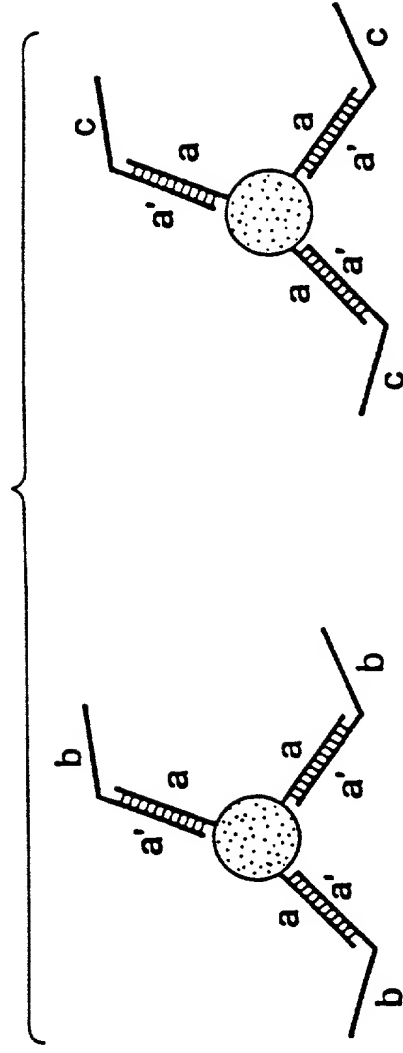


FIG.17E

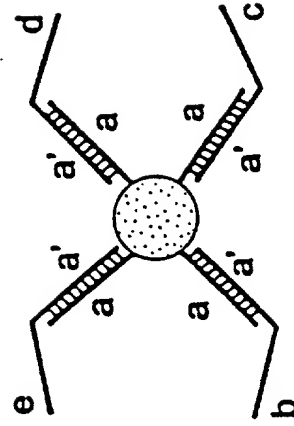


FIG.18

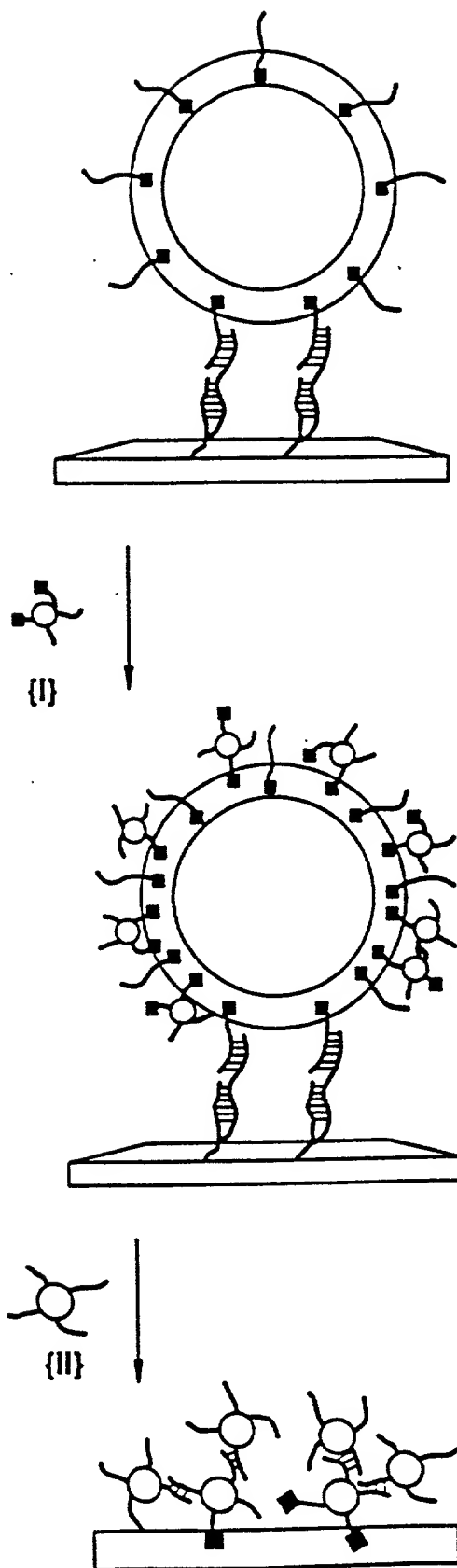


FIG.19A

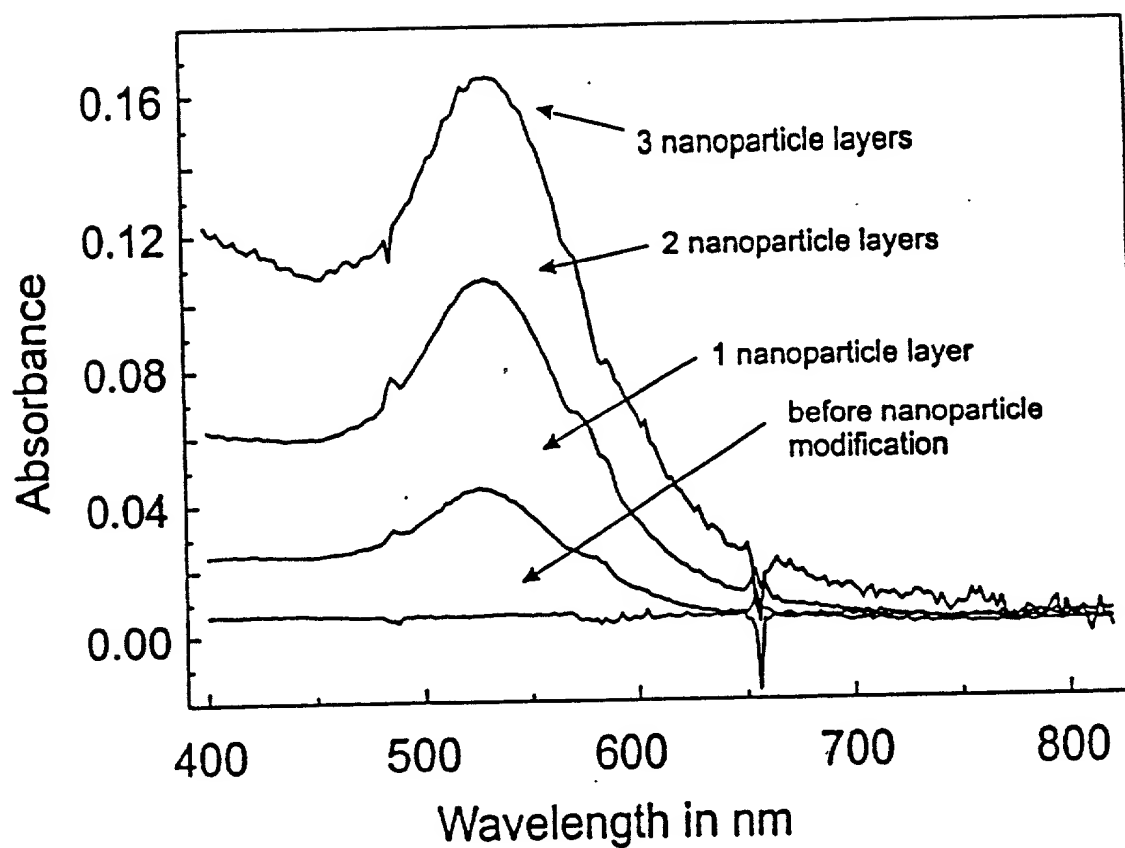


FIG.19B

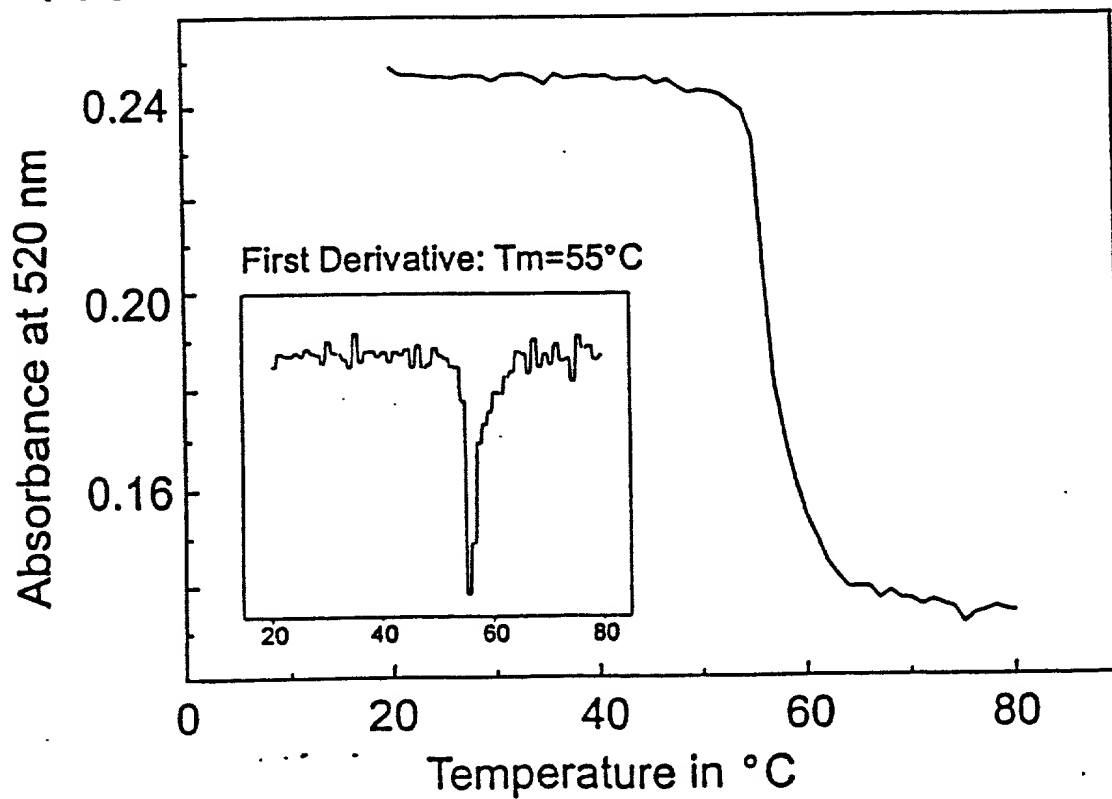


FIG.20A

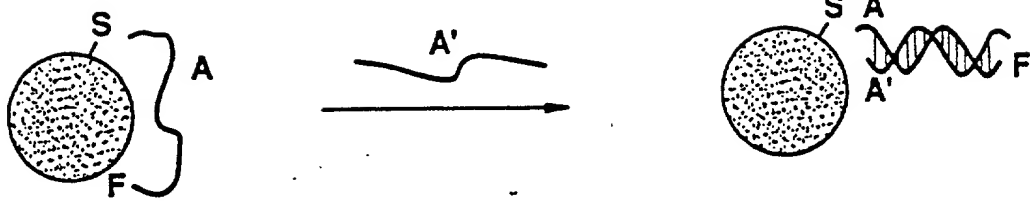


FIG.20B

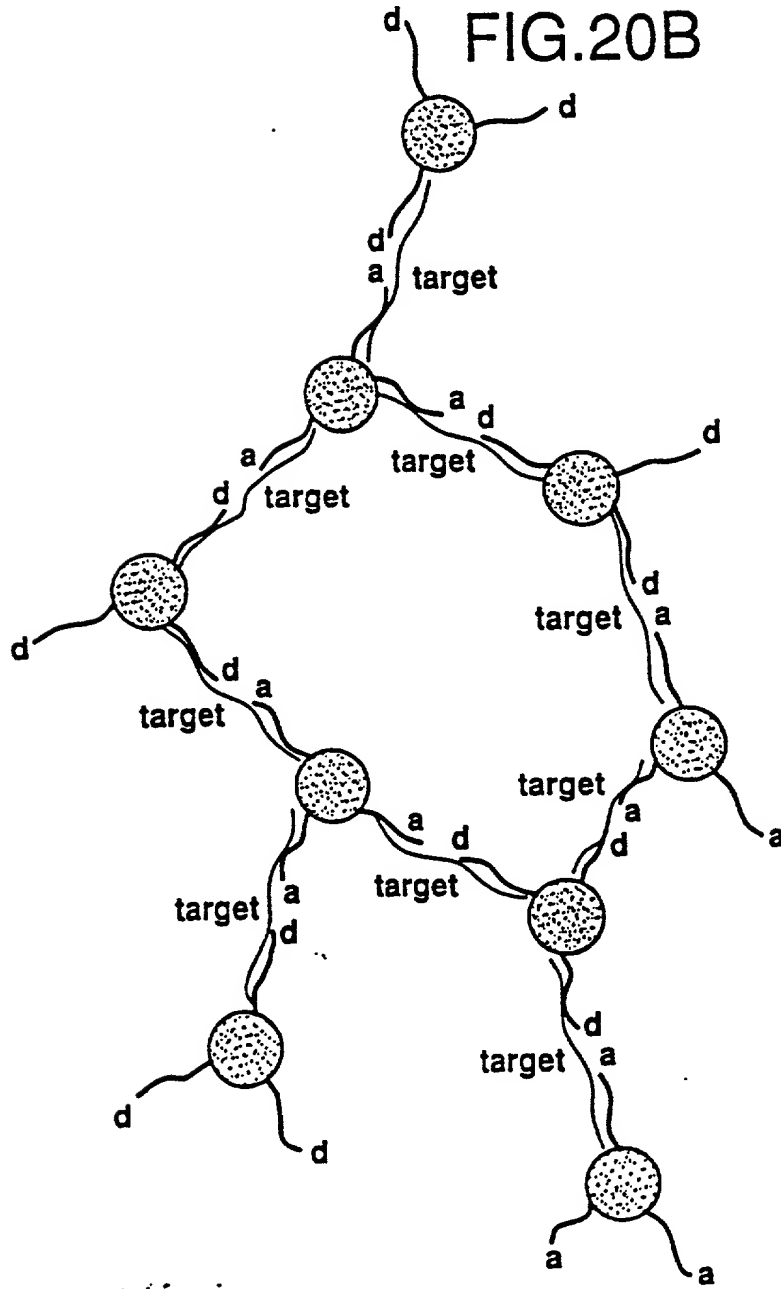
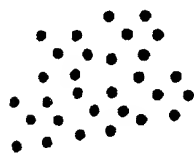


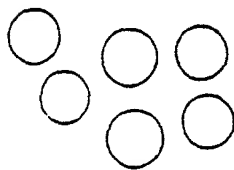
FIG. 20A-20B

Oligonucleotide  
modified Au  
nanoparticle probes



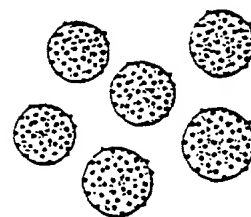
Red

Fluorophore labeled  
oligonucleotide modified  
latex probes



White/Fluorescent

Au/Latex hybrid

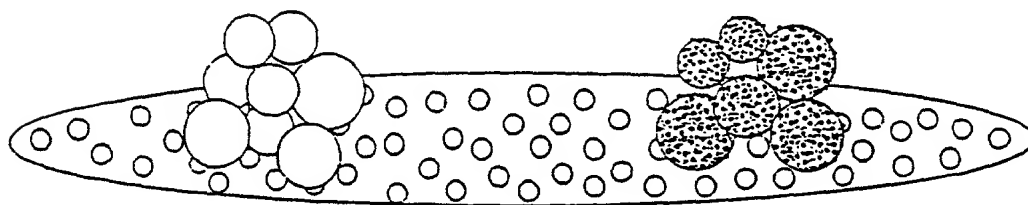


Pink/Non-fluorescent

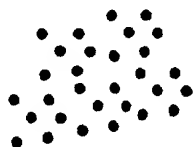
Target  
Oligonucleotide

No Target  
Oligonucleotide

Target  
Oligonucleotide



All Au probes pass  
through membrane

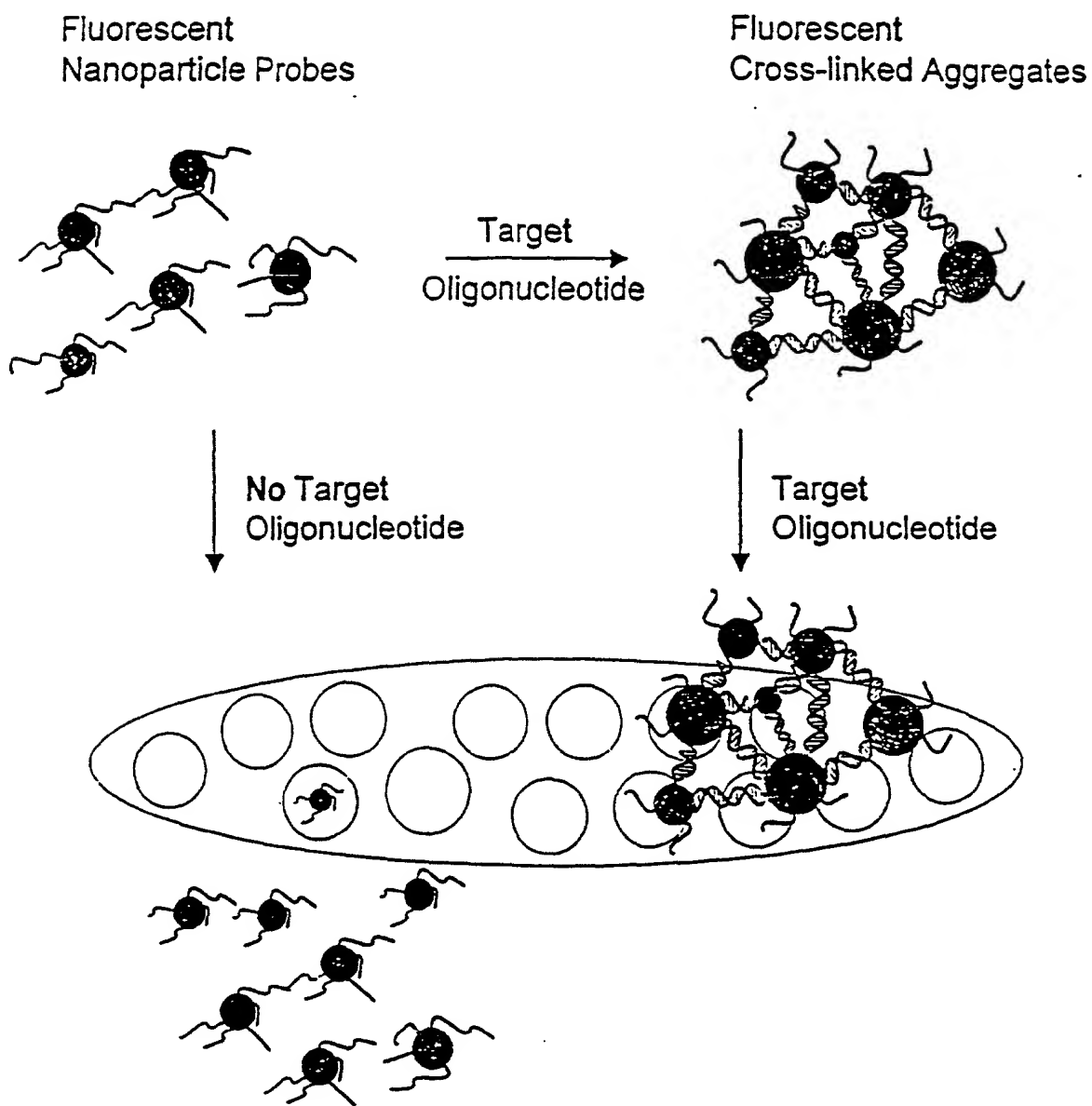


Excess Au probes  
pass through  
membrane



FIGURE 21

FIGURE 22



The fluorescent nanoparticle probes pass through the membrane

The fluorescent cross-linked aggregates are retained by the membrane



## Anthrax PCR Product

5'G GCG GAT GAG TCA GTA GTT AAG GAG GCT CAT AGA GAA GTA ATT AAT  
3'C CGC CTA CTC AGT CAT CAA TTC CTC CGA GTA TCT CTT CAT TAA TTA

TCG TCA ACA GAG GGA TTA TTG TTA AAT ATT GAT AAG GAT ATA AGA AAA  
AGC AGT TGT CTC CCT AAT AAC AAT TTA TAA CTA TTC CTA TAT TCT TTT

ATA TTA TCC AGG GTT ATA TTG TAG AAA TTG AAG ATA CTG AAG GGC TT 3'  
TAT AAT AGG TCC CAA TAT AAC ATC TTT AAC TTC TAT GAC TTC CCG AA 5'

141 mer Anthrax PCR product [SEQ ID NO:36]



### Blocker Oligonucleotides

3' C CGC CTA CTC AGT CAT CAA TTC CTC CGA GT	[SEQ ID NO:39]
3' A TCT CTT CAT TAA TTA AGC AGT TGT	[SEQ ID NO:40]
3' TAT TCT TTT TAT AAT AGG TCC CAA TAT	[SEQ ID NO:41]
3' AAC ATC TTT AAC TTC TAT GAC TTC CCG AA	[SEQ ID NO:42]

FIGURE 23

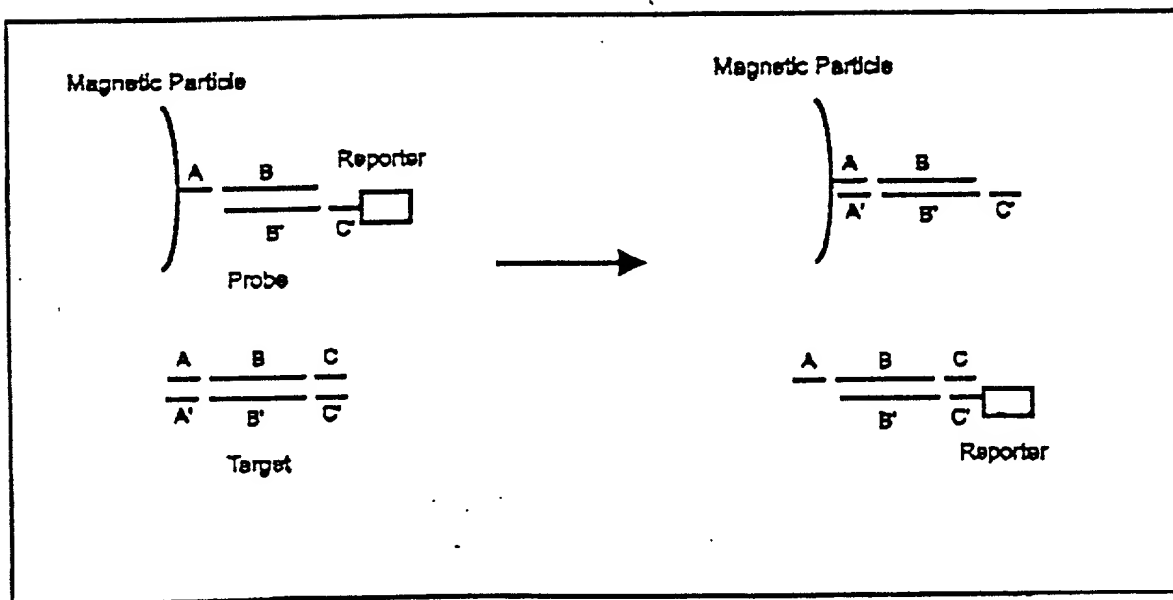
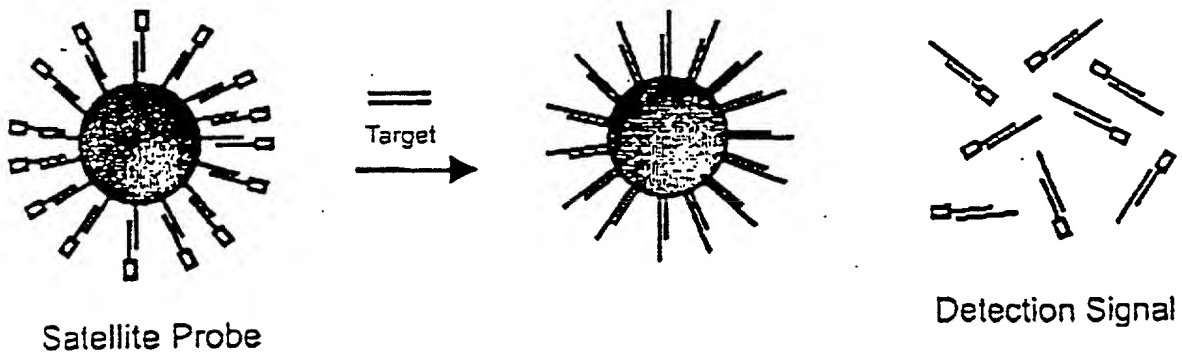


FIGURE 24

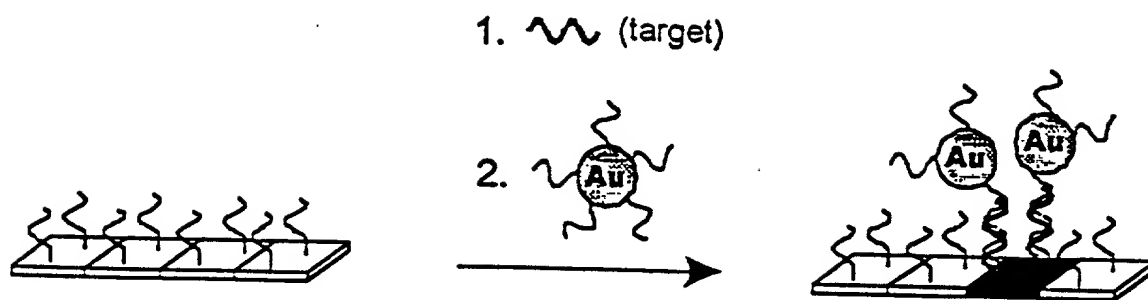


FIGURE 2.5A

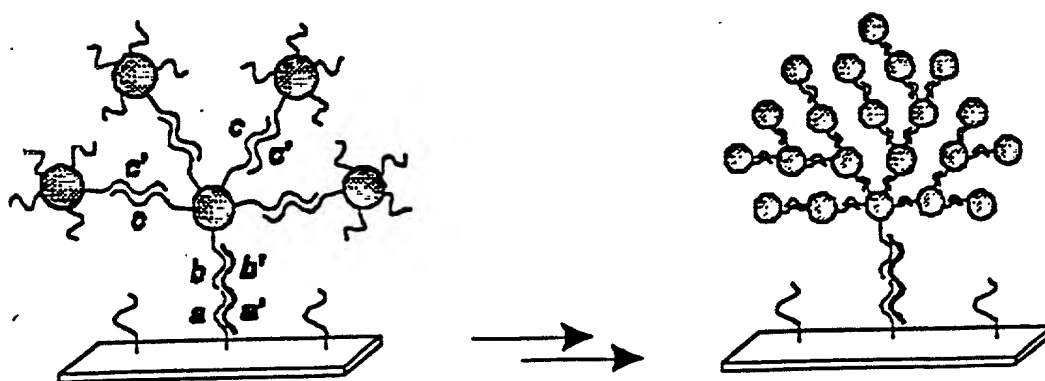
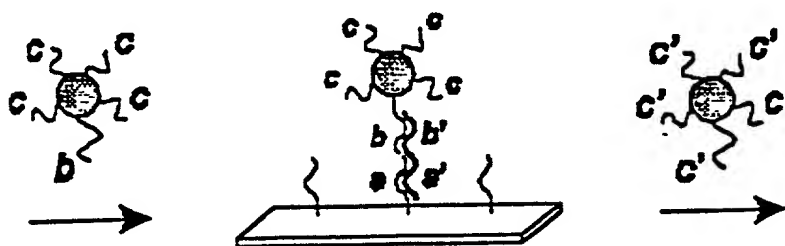
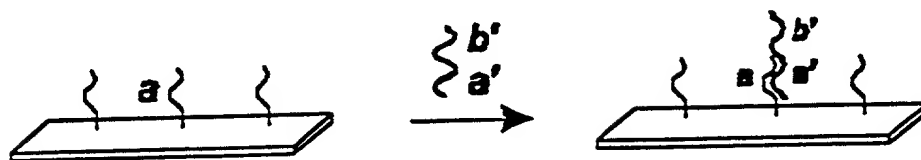
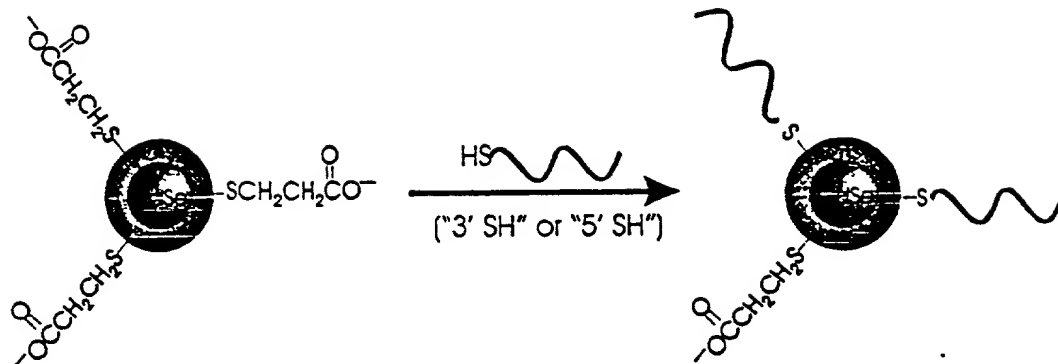


FIGURE 2.5B

A



B

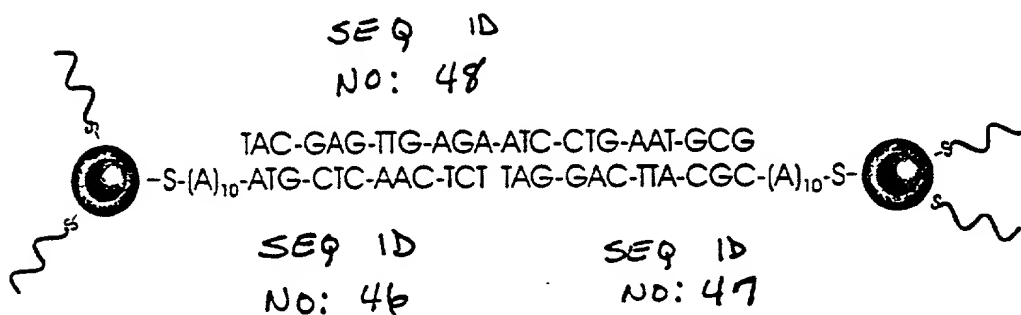


FIGURE 26

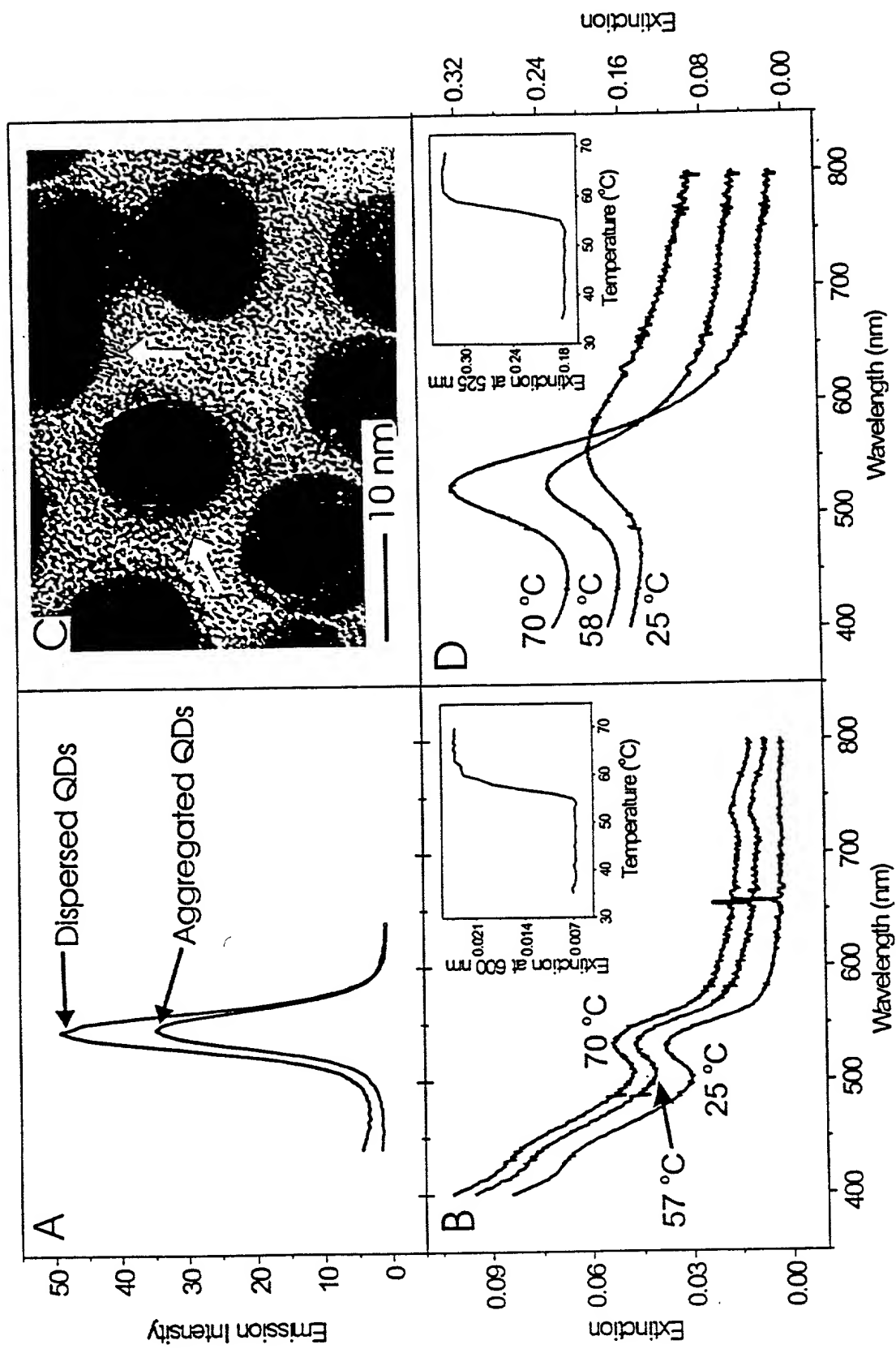
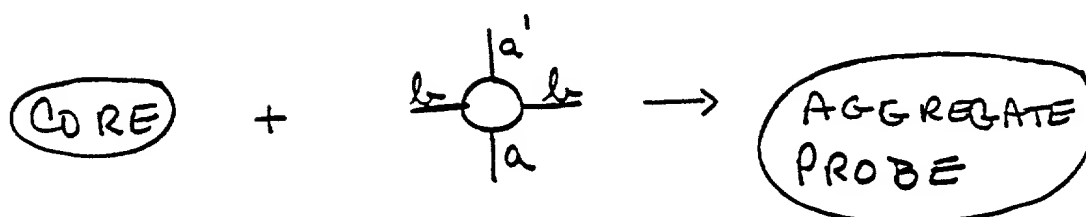
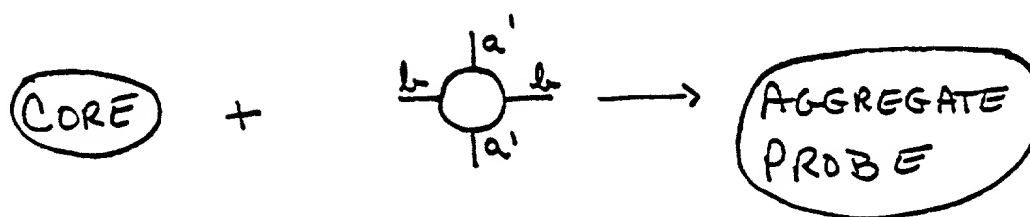
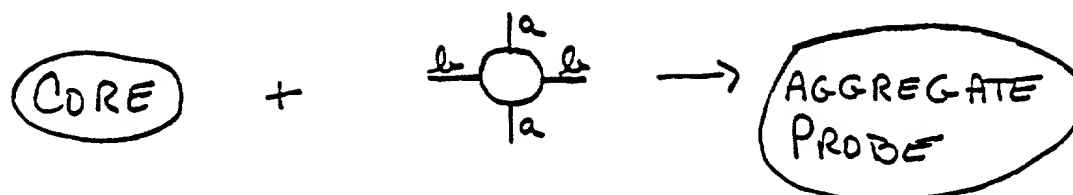
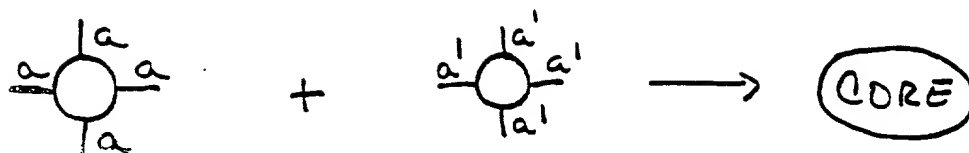


FIGURE 27



TOP SECRET

FIGURE 28A

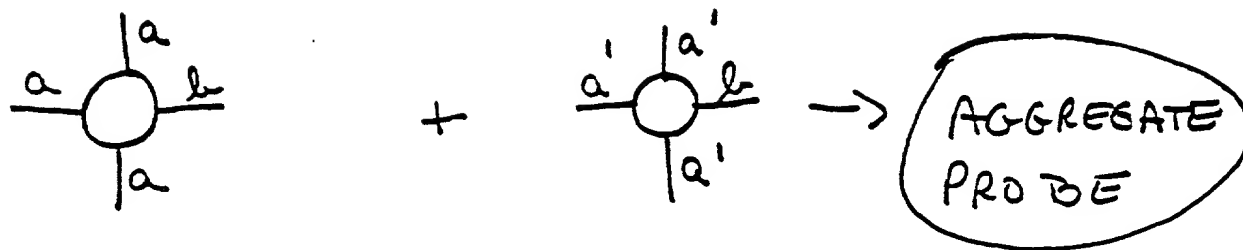


FIGURE 28 B

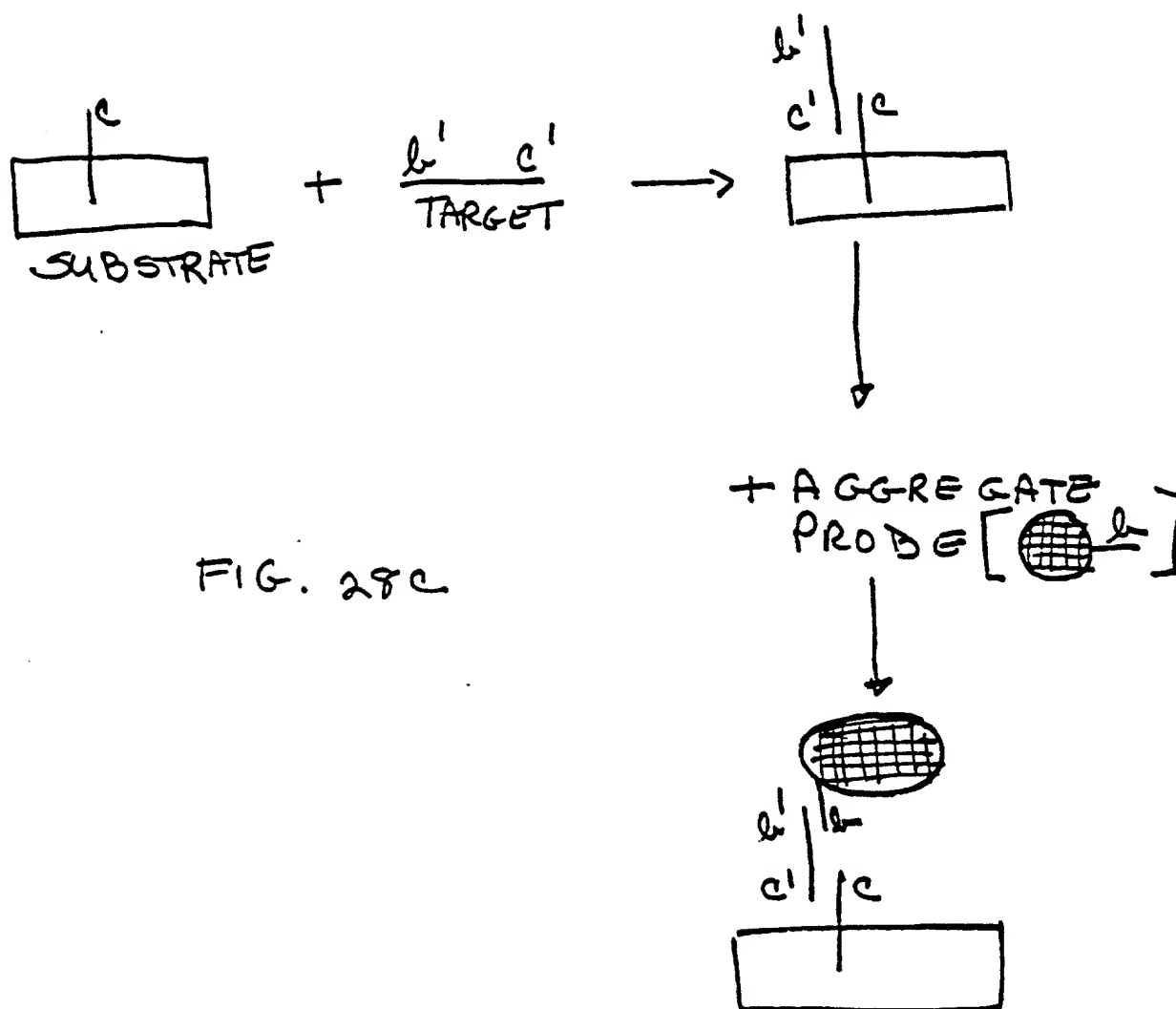
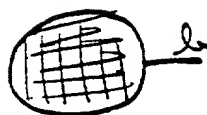


FIG. 28 C

  
 AGGREGATE  
 PROBE

+  $\frac{b' \quad c'}{\text{TARGET}}$  +  $\begin{matrix} c \\ \circ \end{matrix} d$

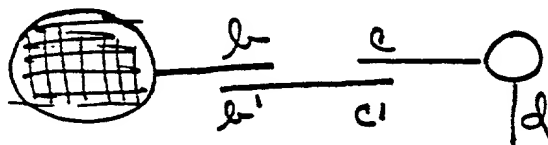
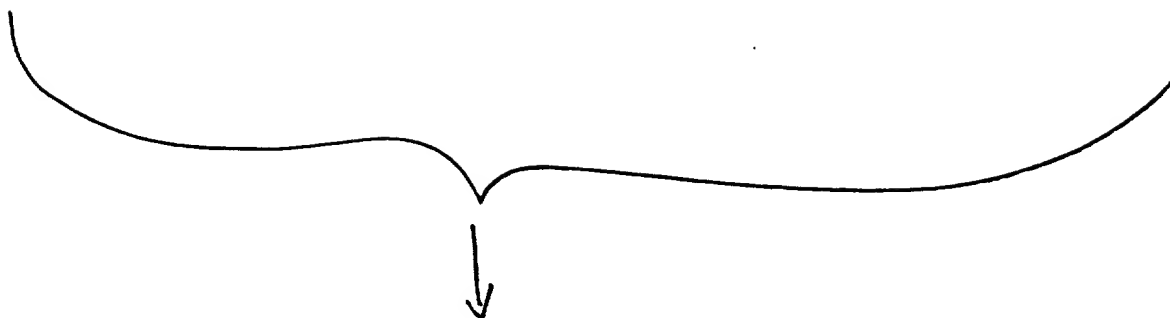
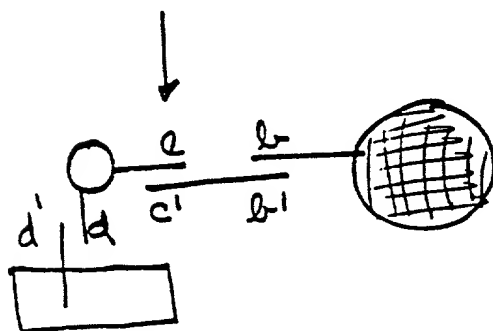


FIG. 29D

REMOVE EXCESS  $\begin{matrix} c \\ \circ \end{matrix} d$   
 BY CENTRIFUGATION

+  $\begin{matrix} d' \\ | \\ \square \end{matrix}$  SUBSTRATE



TOP SECRET



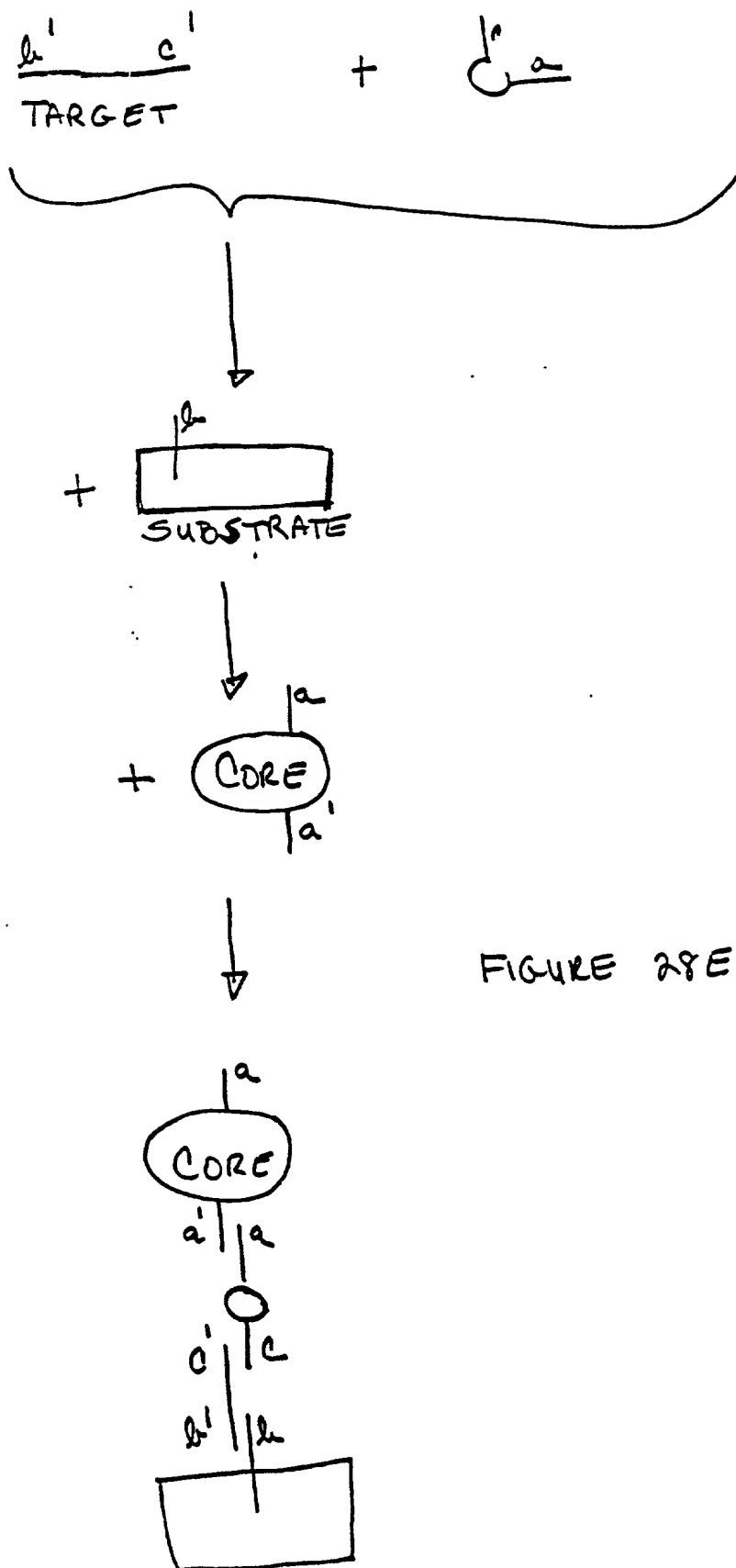


FIGURE 28E

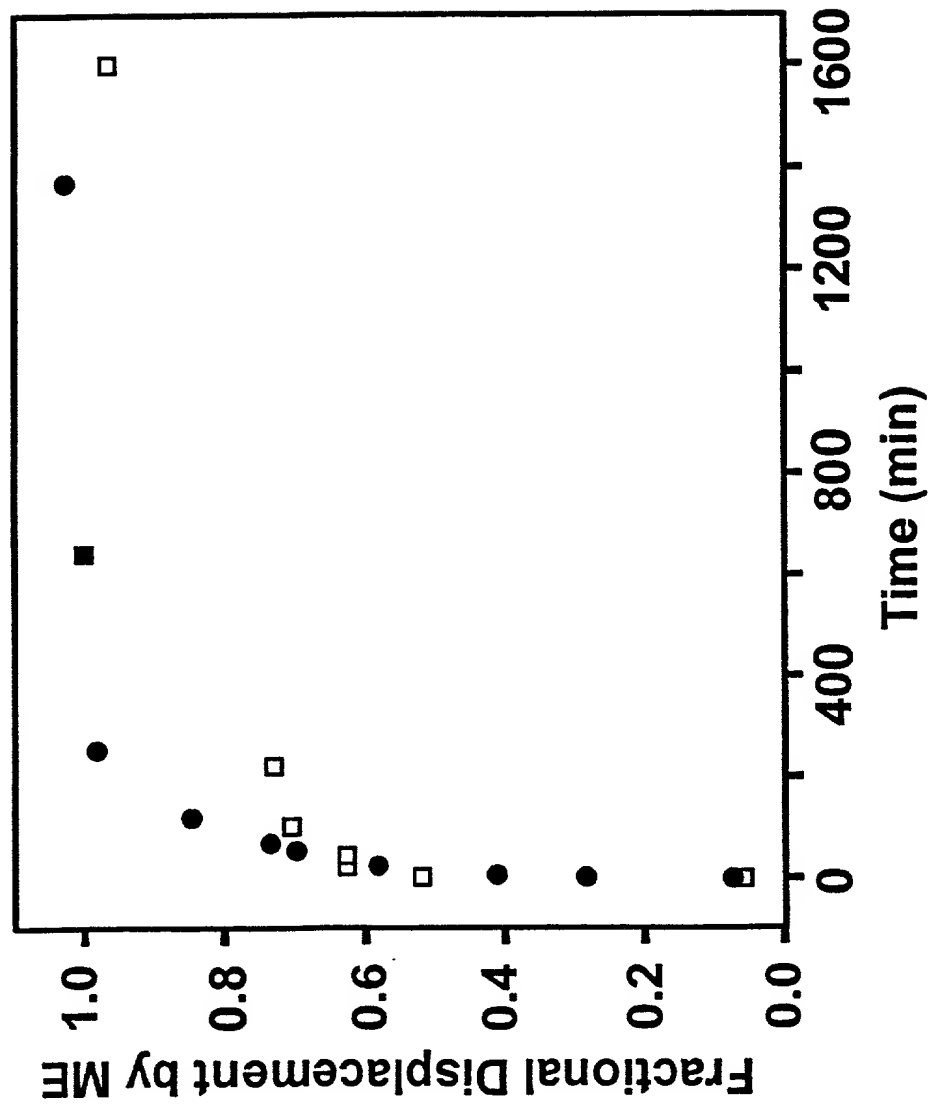


Figure 29

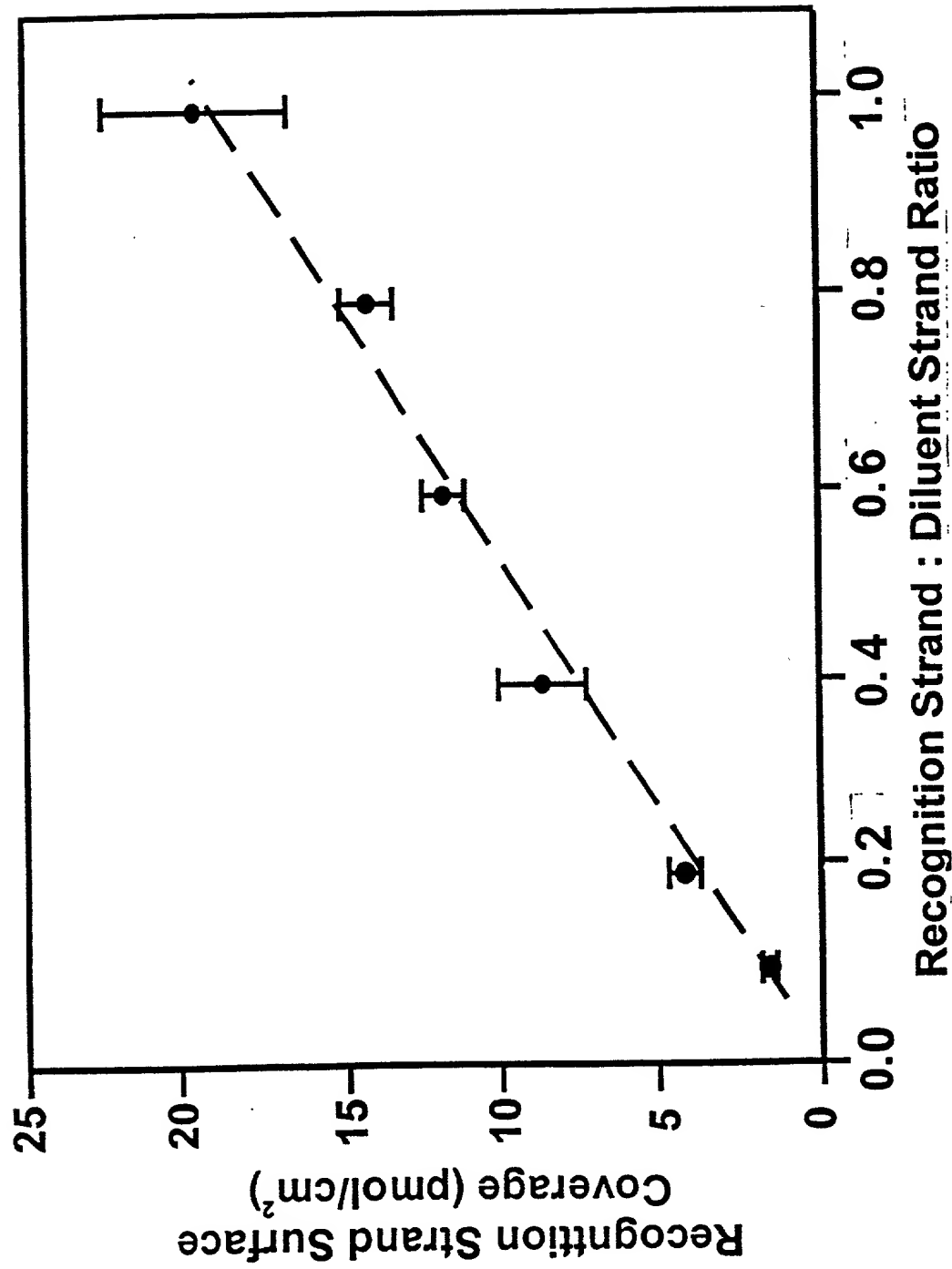


Figure 30

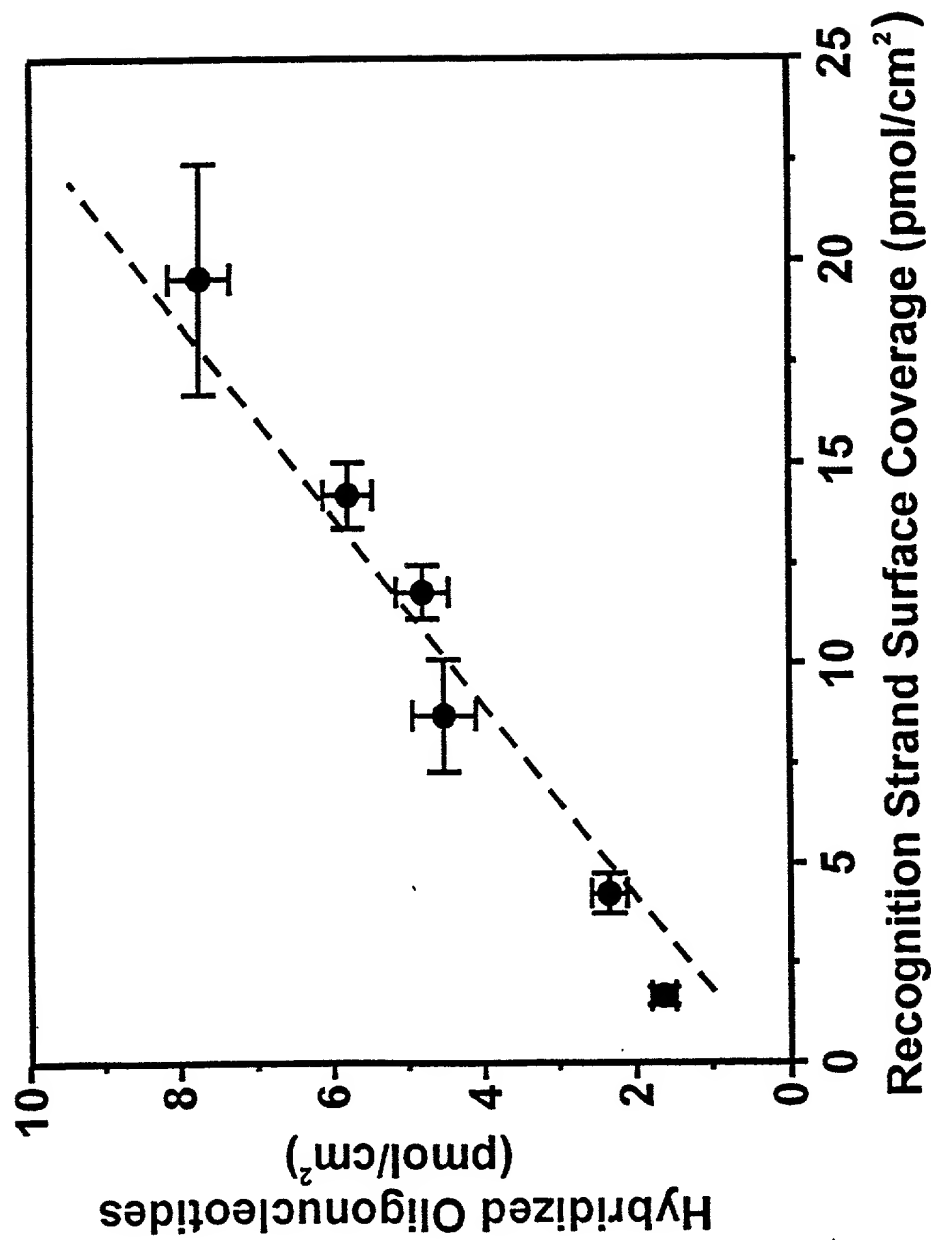


Figure 31

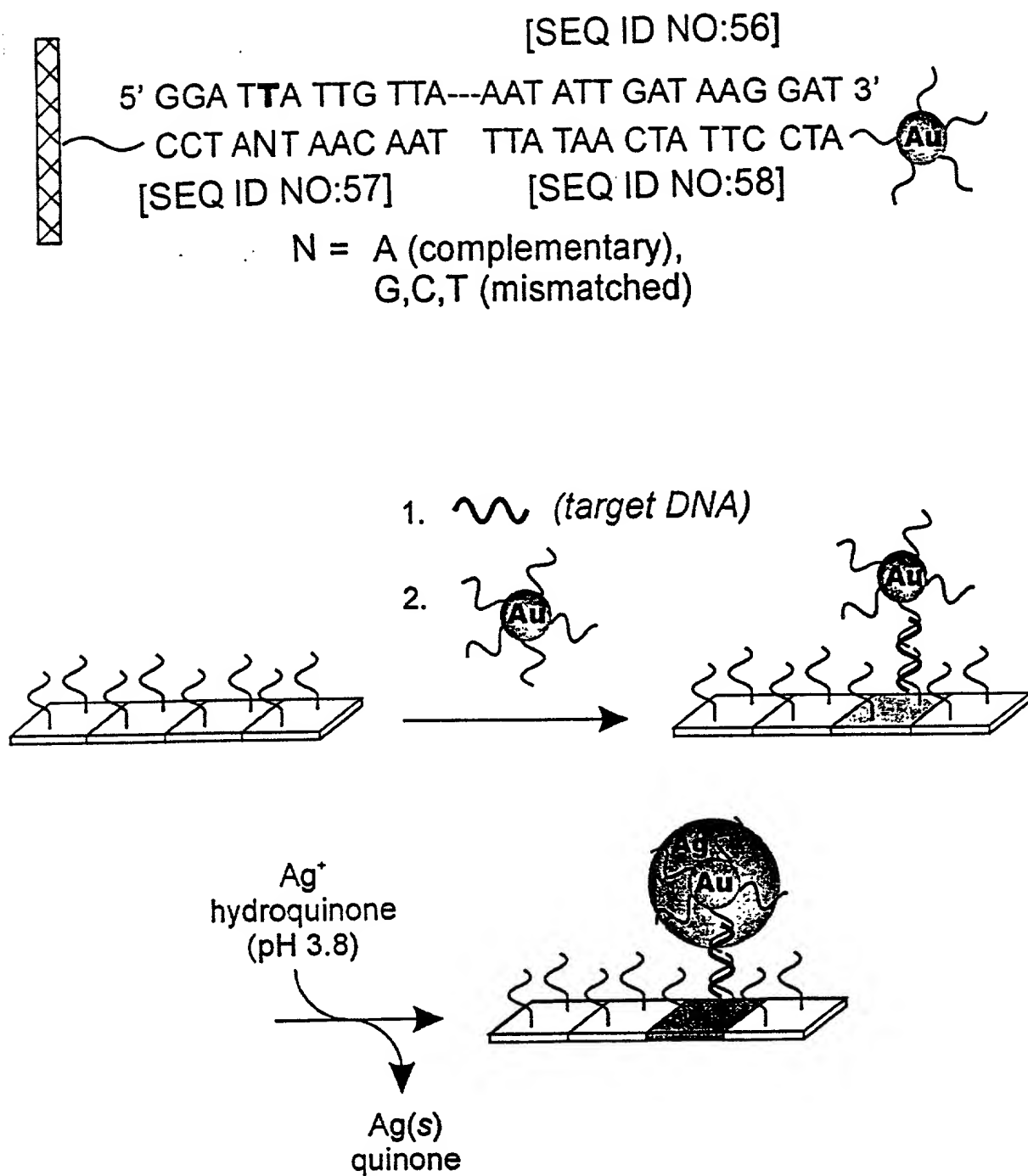


Figure 32

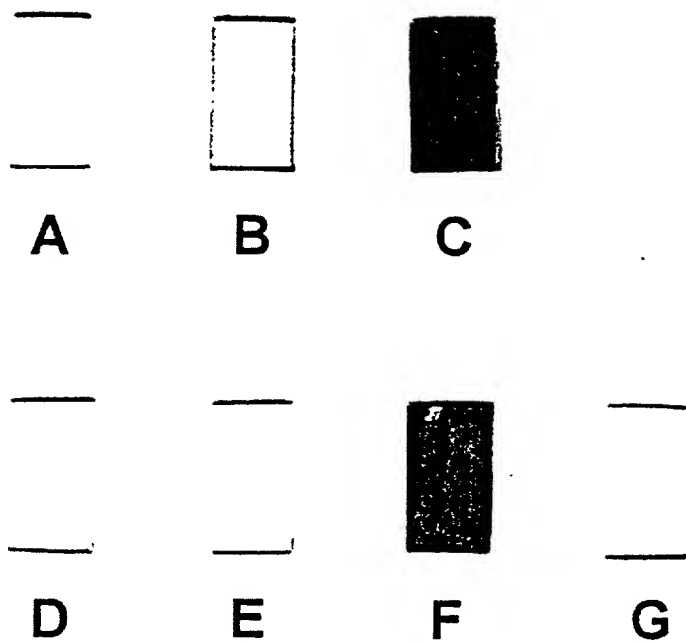


Figure 33

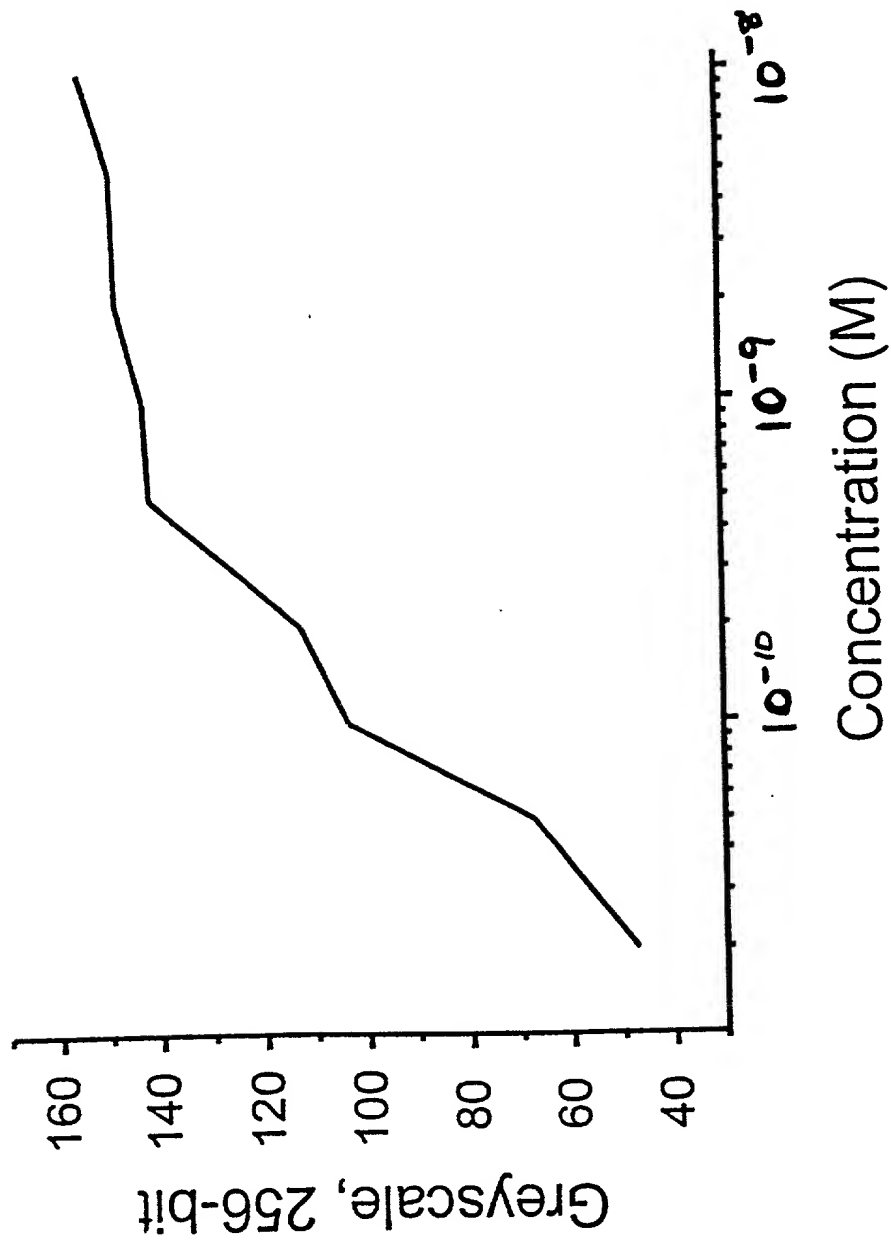
[illegible]

Figure 34

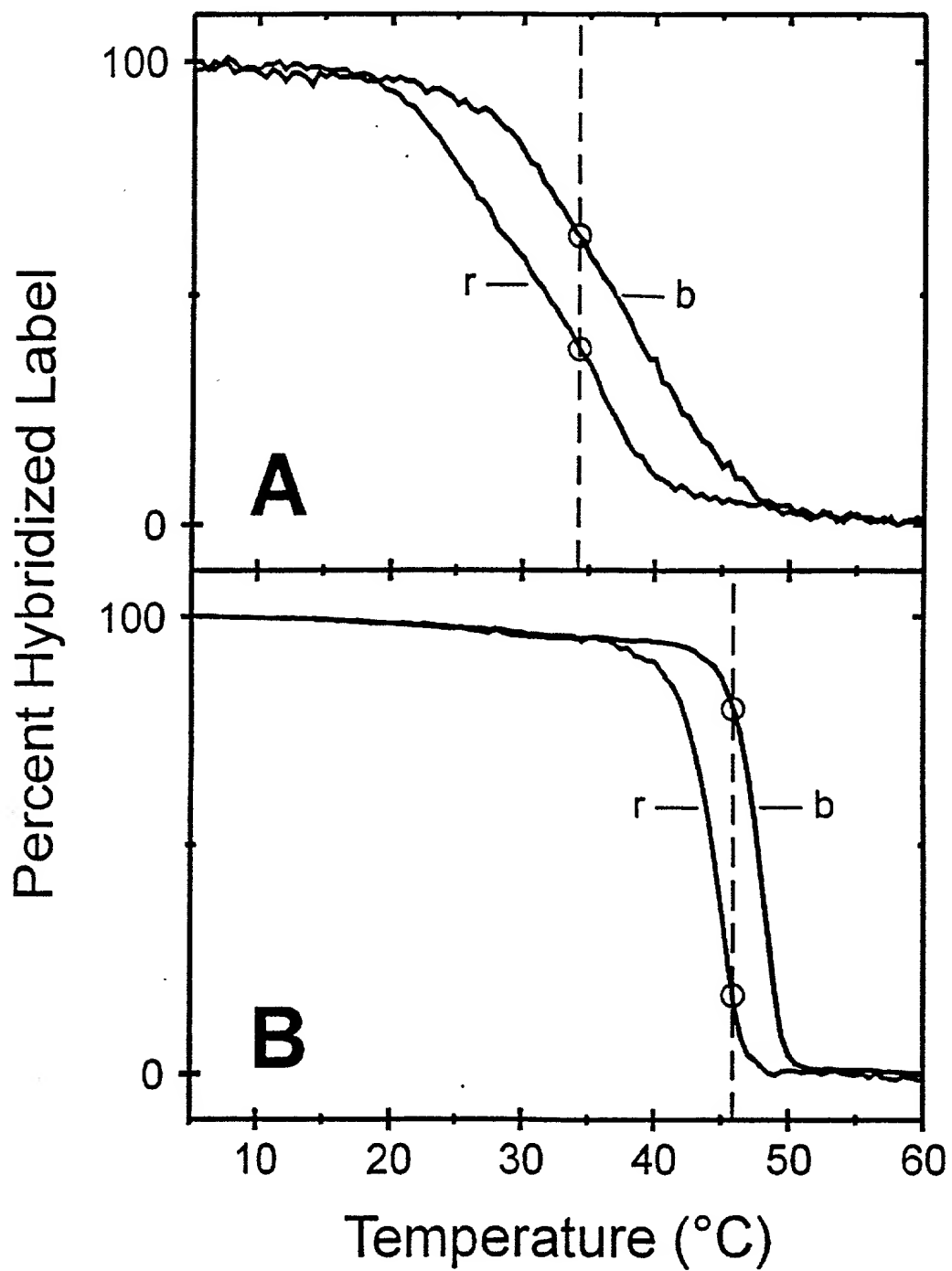


Figure 35



FD-307 (Rev. 11-29-60)

FIG. 36A

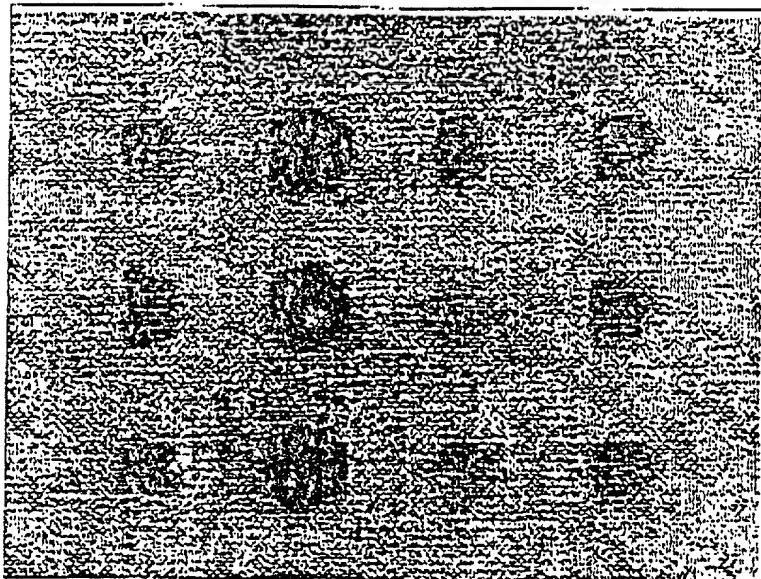
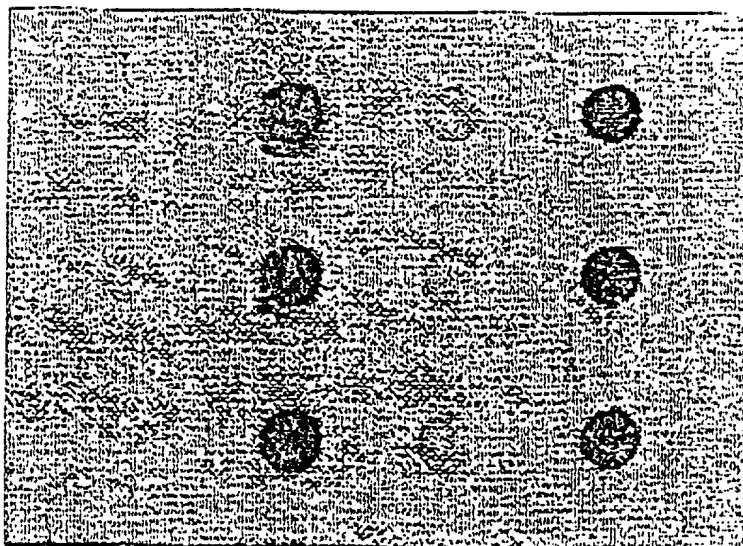
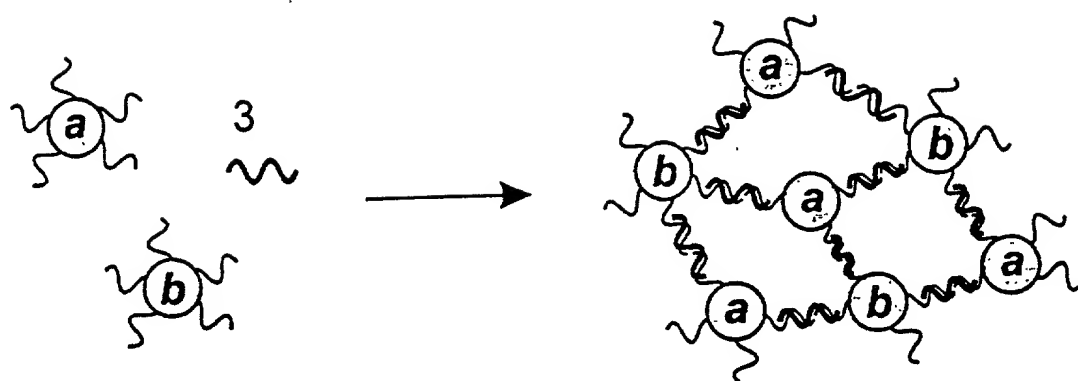


FIG. 36B



C A T G

**A**



**B**

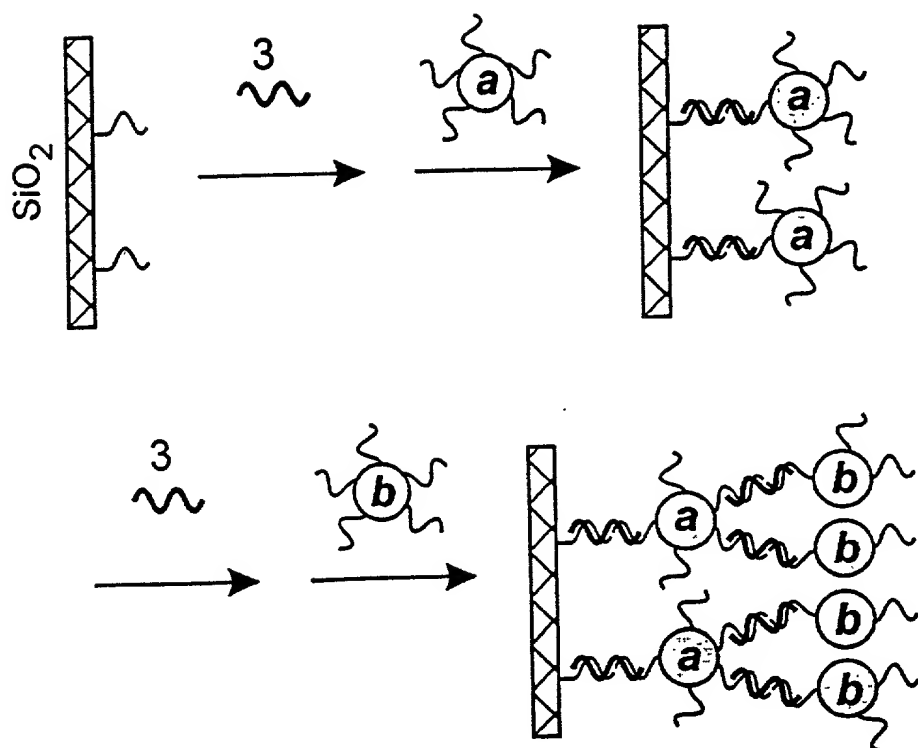


Figure 37

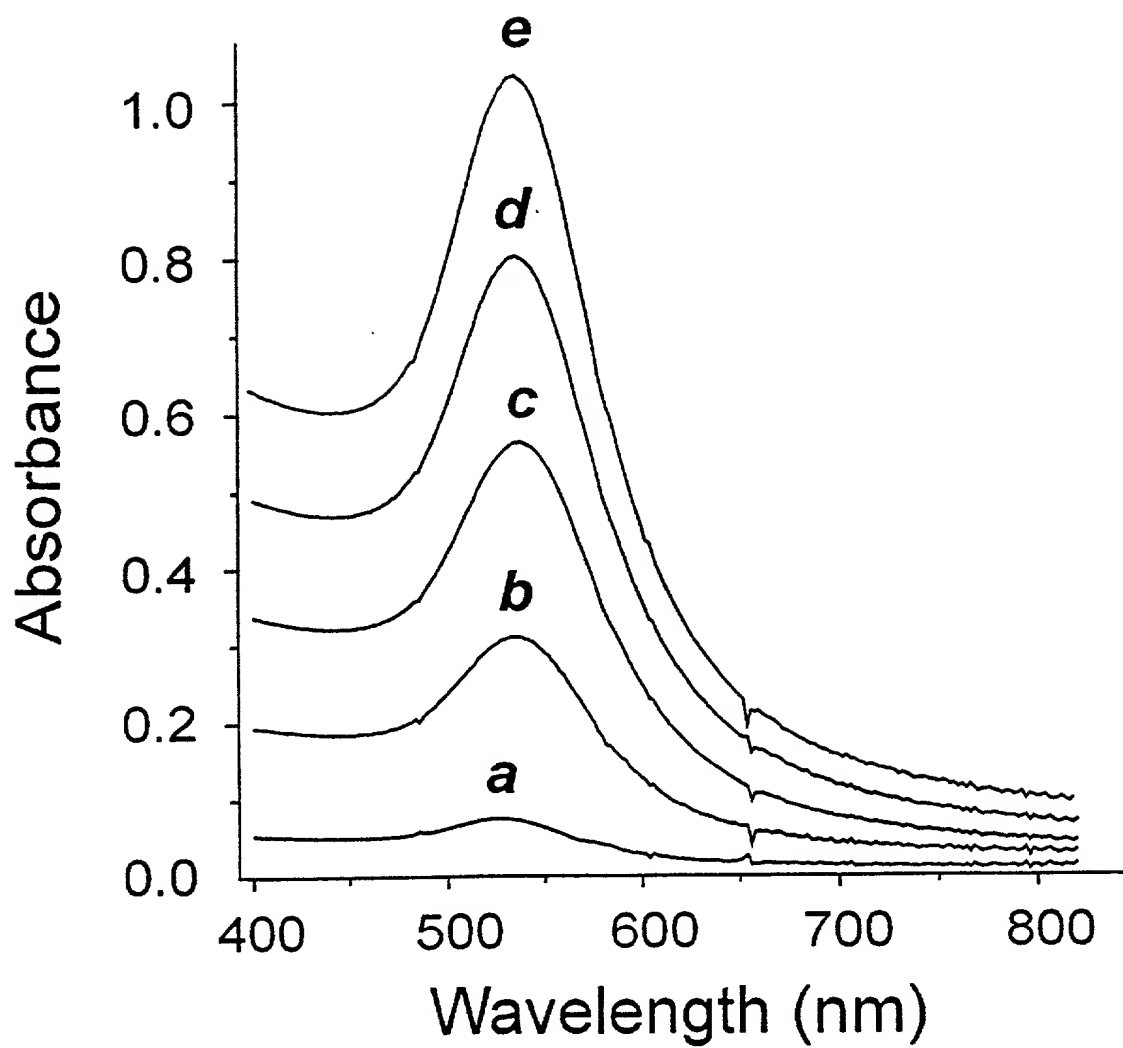


Figure 38A

130307-00000000

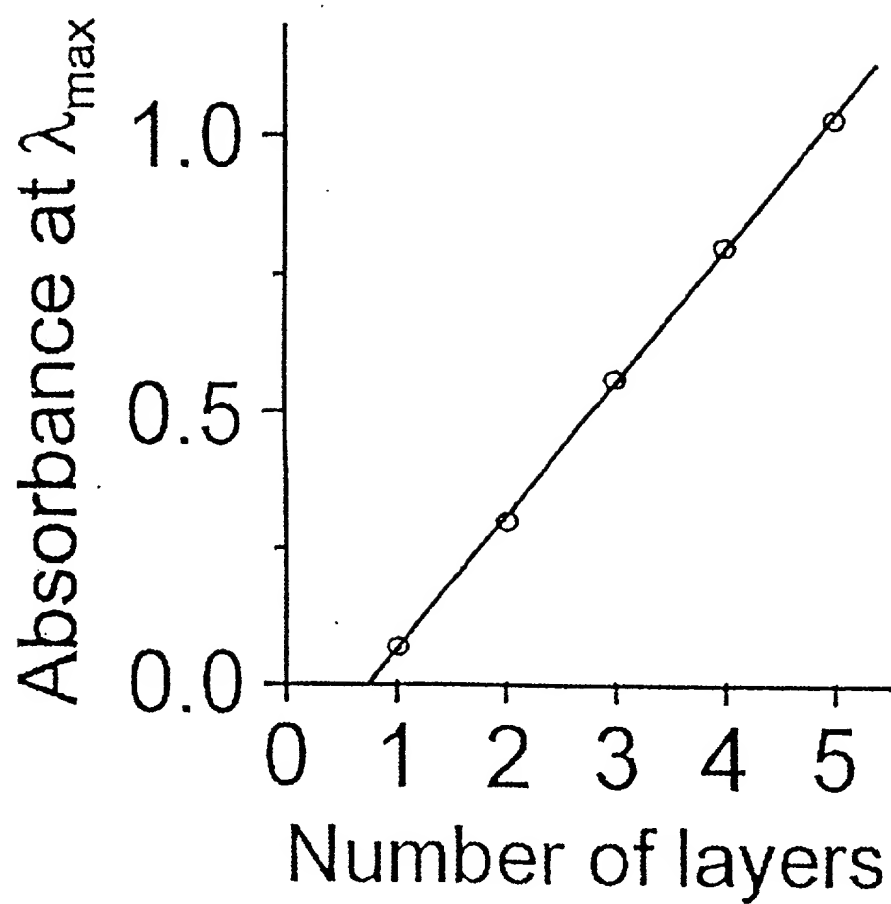


Figure 38B

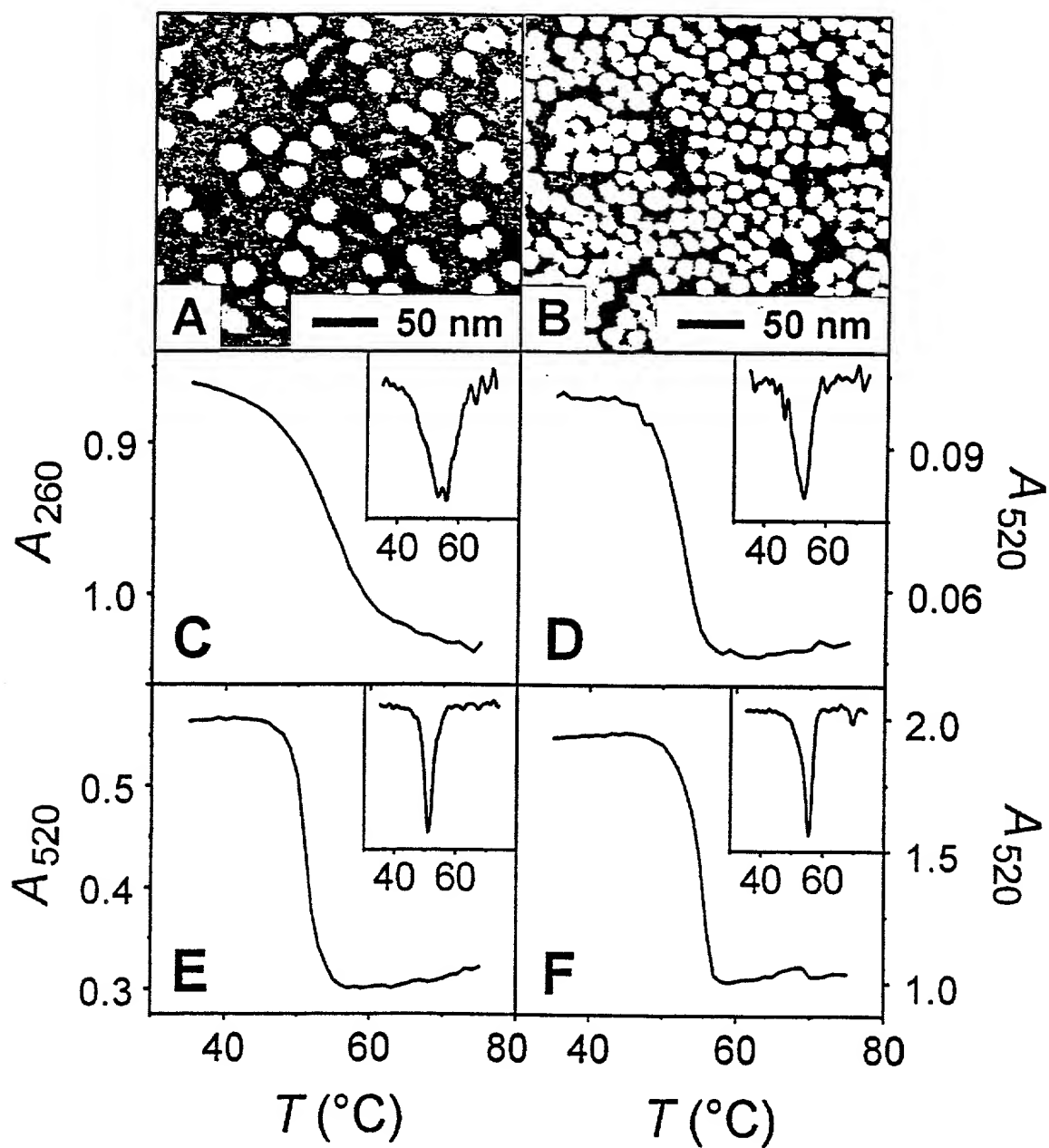


Figure 39

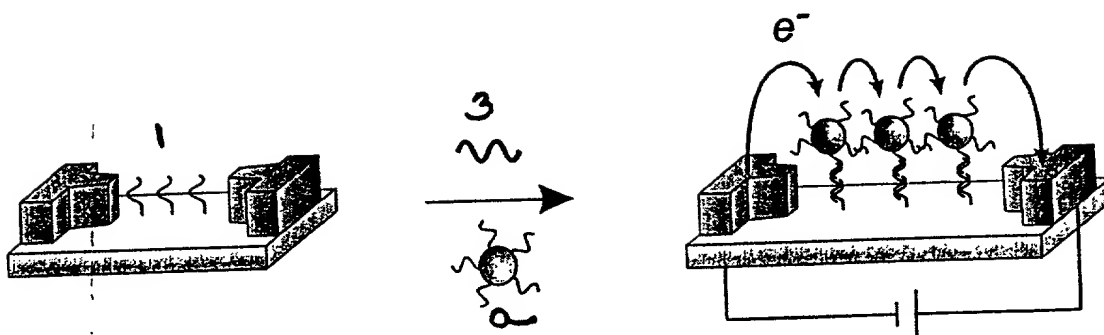
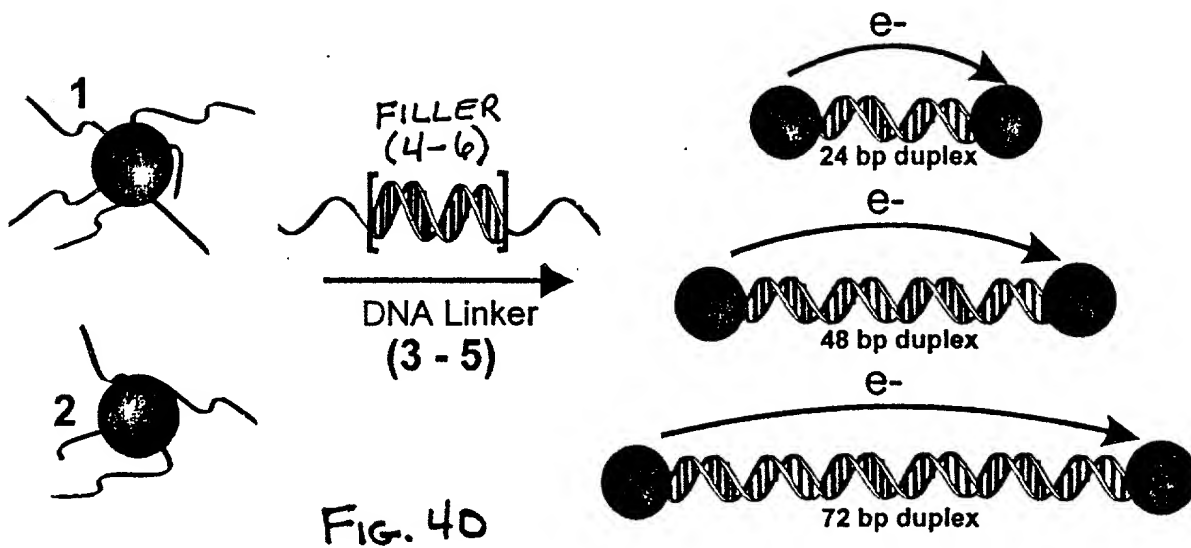


FIG. 41